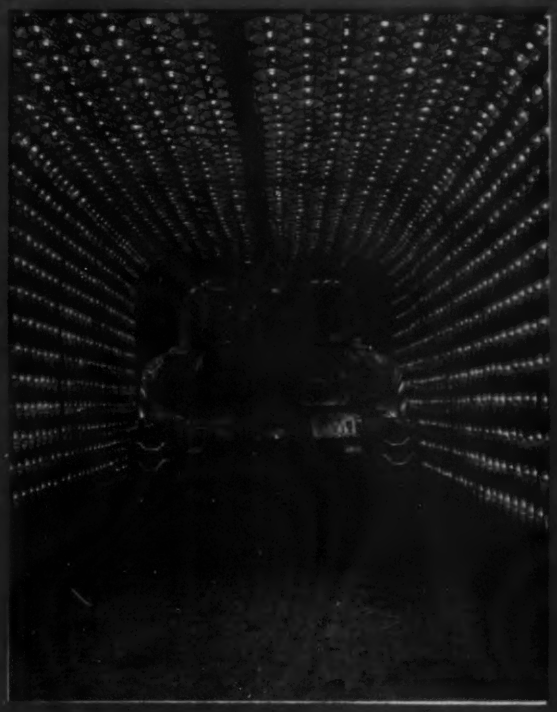
AMERICAN ARTISAN

DECEMBER
1943



RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING • SHEET METAL CONTRACTING

ESTABLISHED
1880

"Good News!

Lamneck is Going to Get Some Metal in 1944 for Pipe and Fittings"

Says the Lamneck Jobber

You metal-shop owners all over the country will be glad to hear that we now see hopeful signs of obtaining some metal very soon. This is good news for two reasons. First, this shows that our Government is recognizing certain civilian needs. Second, our steel mills are fulfilling their obligations of meeting increased demands for the war effort.

This is heartening news because it means that soon we will be able to start turning out Lamneck Products again . . . the famous kind you've known for so long and always preferred.

Let us not be overly optimistic, however, and expect too much. Officially we don't know yet just how much metal will be released to us. But we're hoping it will be sufficient to get going again . . . so we can at least supply you partially . . . until still more metal is released.

REMEMBER! Please don't forget that your loyal Lamneck Jobber has been trying to do a lot with little...and that he stands ready, with all his facilities, to begin serving you again with Lamneck Products just as soon as we are able to ship them to him.

LAMNECK PRODUCTS

MIDDLETOWN • OHIO

Get the job done *Faster..Better* with

usAIRco

BLOWERS • WASHERS COILS

The big task now is to get the job done quickly, efficiently—to get the types of blowers you need to produce the result you want.

USAIRCO can meet your needs now with a complete line of blowers—the result of twenty years of experience in the design and manufacture of air handling equipment.

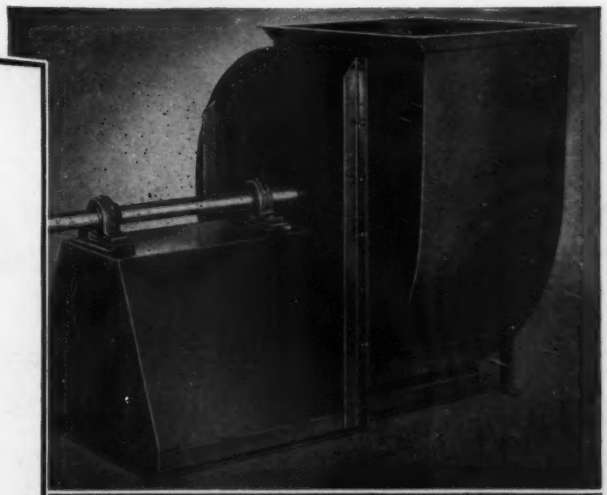
USAIRCO products are functioning today for every phase of the war effort—for the Army, Navy and Maritime Commission—in war plants, airplane factories and processing industries. They are demonstrating their ability to meet the job requirement and the operating budget.

Write today for complete details, prices and delivery dates. Individual catalogs and ratings on all USAIRCO units are available.

UNITED STATES AIR CONDITIONING CORPORATION

Manufacturers of the most complete line of air-handling equipment. Factory representatives in principal cities.

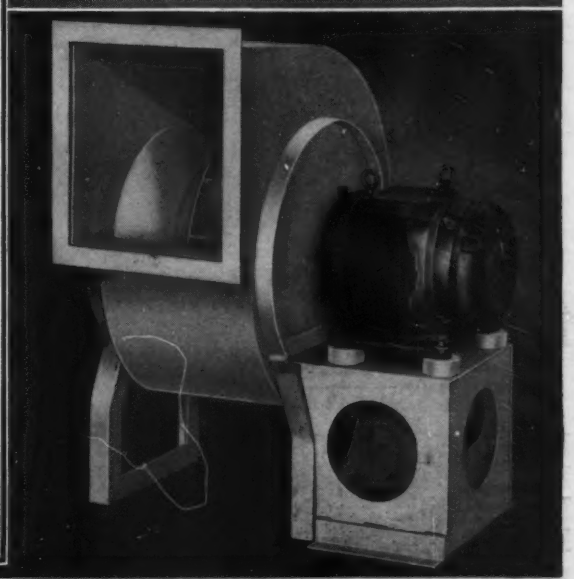
Northwestern Terminal • Minneapolis, Minnesota

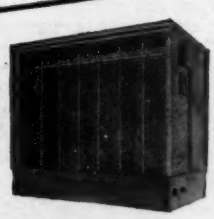


HEAVY DUTY BLOWERS

For industrial and commercial applications usAIRco has a complete line in all popular arrangements. Pictured above is arrangement number one Blower, with both bearings outside air stream.

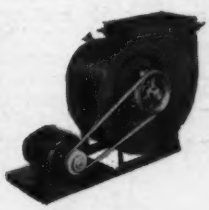
Below is arrangement number four Blower. Available in both backwardly inclined blade and forwardly curved blade types—sturdily constructed for industrial and other heavy-duty requirements.





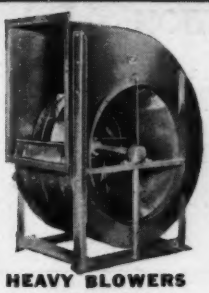
AIR WASHERS

Single and double stage air washers in various capacities for all needs. Used in installations where dependable equipment is required for air cleaning, cooling, humidifying or dehumidifying. Air Washers operate with cold water or refrigerating apparatus.



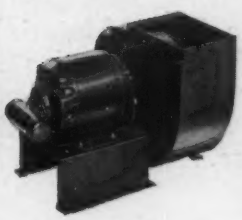
"E" BLOWERS

Belt-driven exhaust blower for light duty work where static resistance is low. Type "E" Blowers are easy to service; are available in several discharge arrangements. An adjustable pulley permits 30% speed variation to handle air as required in different installations.



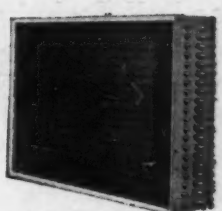
HEAVY BLOWERS

Backwardly curved blade type shown (also blowers with forwardly curved blades), available in types and capacities ranging from 2,000 to 70,000 c.f.m. Used for large scale air handling jobs. Made in single and double inlet, and in varied discharge arrangements.



"SU" BLOWERS

Direct-driven exhaust blowers are designed for use where space is limited. Built strongly, mounted rigidly to prevent vibration. Slow speed motor operates the wheel. Efficient for exhaust applications in warehouses, factories, barracks or mess halls.



COILS

Cooling, heating and air conditioning Coils—fin type with high heat transfer efficiency. Now constructed of steel to conform with wartime regulations.

AMERICAN ARTISAN

WITH WHICH ARE MERGED

FURNACES AND SHEET METALS

AND

Warm-Air Heating

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

J. D. Wilder, Editor — A. A. Kennedy, Assistant Editor

Vol. 112, No. 12 December, 1943 Founded 1880

CONTENTS

Let's Keep Control of Replacement Furnaces..... 21
Suggested Plan for Replacement Distribution..... 22
Kruckman—Post War Material Controls..... 26
Ass'n Says—Post War Furnace Market..... 28
On Our Industry's Front..... 31
Interpretations, Amendments to Old Orders..... 39
Nat'l Warm Air Ass'n History (Part 9)..... 58
Index to Editorial Articles in 1943..... 59
Association Activities..... 64
New Products..... 65
New Literature..... 68
With the Manufacturers..... 70
American Artisan's War News..... 86

THE RESIDENTIAL AIR CONDITIONING SECTION

Konzo—How To Check Gravity Furnace Size..... 35
Handle Heating Complaints by Telephone..... 38
Letters Build Service Volume..... 40
Neubecker—Transition Offset Fitting..... 42

THE SHEET METAL SECTION

Paper Doll Technique Saves Material..... 47
All-Welded, 14-Ga., Soaking Kettles..... 50
Range Hoods, Chimney Jacks, in Army Camp..... 52
Check Old Fan and Motor Before Adding Machines.. 54
The New Solder Order..... 56

In This Issue

THE suggested plan for assigning a quota of replacement furnaces from the expected 200,000 we are promised in 1944, by counties, is continued in this issue—we print the tabulation for the number 2 area, 9½ states in the northeastern section of the country.

The underlying problem of such a distribution and the tabulations for the heaviest-user area appeared in November.

It perhaps should be pointed out again that this is only a suggested plan—its purpose is to give furnace dealers some idea of the number of furnaces each county will be entitled to. If a better plan is put in operation, so much the better.

But word from Washington is that some of the strict controls like stove rationing are not perfect and that WPB already is considering ways and means of abolishing rationing in favor — where possible — of industry voluntary control, with perhaps some supplementary plan to take care of "hardship" cases.

This, precisely, is the foundation for American Artisan's suggested plan and for our plea to the industry to keep distribution on a voluntary basis if possible.

If manufacturers, jobbers and dealers will try to repair whenever possible and replace only when necessary, it should be possible to keep distribution in our own hands and to avoid all the complications, paper work, and headaches which accompany rationing.

It is worth our efforts.

❖

Already there is talk of continuing control of critical materials into the post war era on the argument that the "big" companies, the wealthy companies may be able to step in and buy up everything in sight when restrictions are removed, leaving the "small" user in a worse fix than he is in now. Arnold Kruckman, in this issue, explains the situation.

Member of Audit Bureau of Circulations — Member Associated Business Papers, Inc.

Published monthly by Keeney Publishing Company, 6 N. Michigan Ave., Chicago (2), Ill., U. S. A. Copyright 1943 by Keeney Publishing Company. Publisher—Frank P. Keeney; Manager—Chas. E. Price. Advertising staff: Wallace J. Osborn, New York City, Telephone—Murray Hill 9-8293; J. D. Thomas, Chicago, Telephone—State 6916; Robert A. Jack, Cleveland, Telephone—Yellowstone 1540; J. H. Tinkham, Los Angeles, Telephone—Richmond 6191.

Yearly Subscription Price—U. S. and possessions, Canada, Mexico, South America, Central America, $2.00; Foreign, $4.00. Single copies, U. S. and possessions, $.25. Back numbers, $.50. January, 1943, Directory issue, $1.00 per copy. Entered as second-class matter, July 29, 1932, at the post office at Chicago, Illinois, under the act of March 3, 1879.

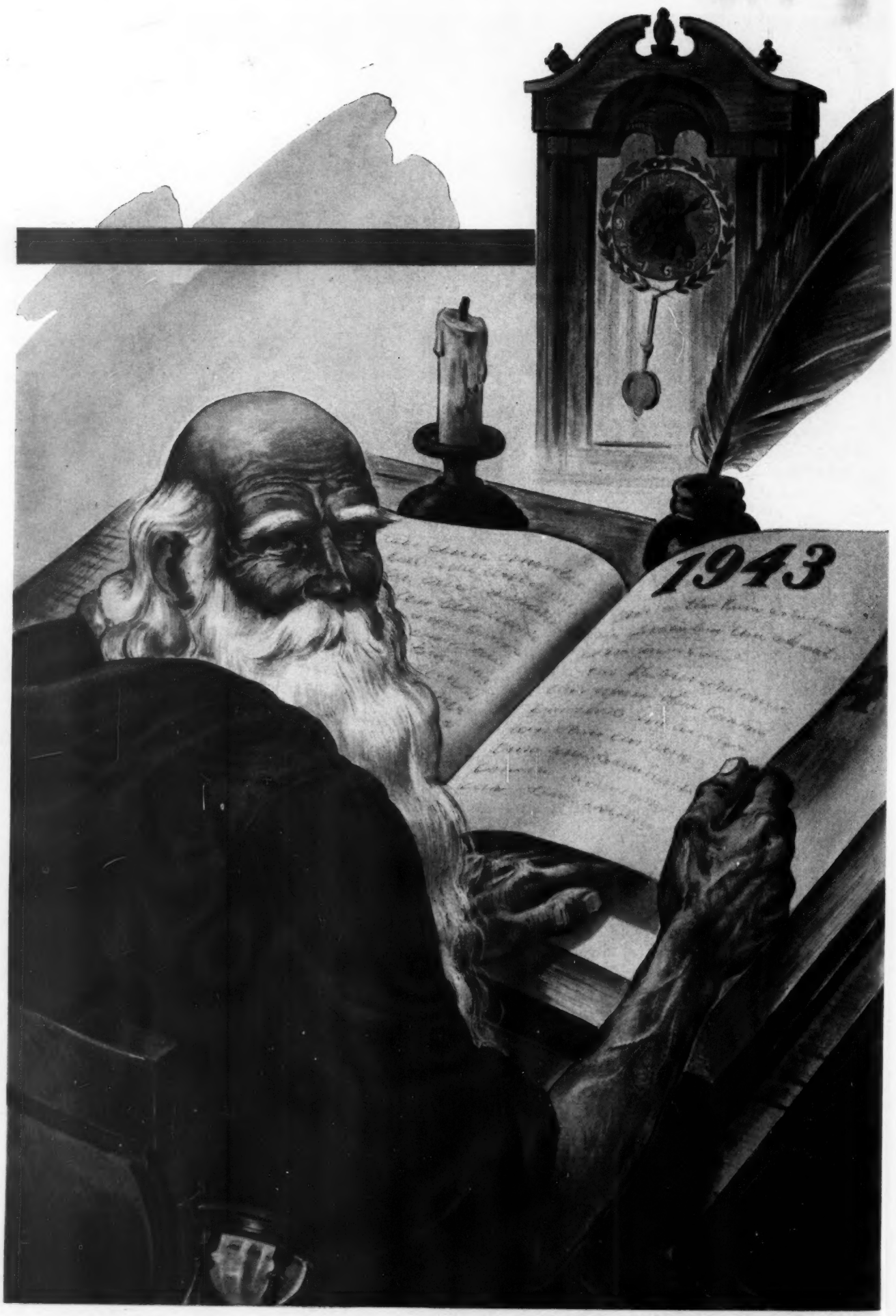
Here's Wishing...

Here's wishing that you may be bombed with joy and happiness all through the gladsome holidays that so well typify the freedom and good will of our way of life. ★ May your fireside be invaded by the joyous Holiday spirit which demands unconditional surrender to the good cheer that routs all dread and care. ★ With all this, may the New Year bring you a full measure of the prosperity, peace and protection that we are all willing to fight and work for.

Save or Slave...
Buy War Bonds

THE RYBOLT HEATER COMPANY

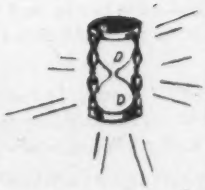
615 MILLER STREET ★ ★ ASHLAND, OHIO


1943

A Time for Considering

The Blank Pages

In Father Time's Book



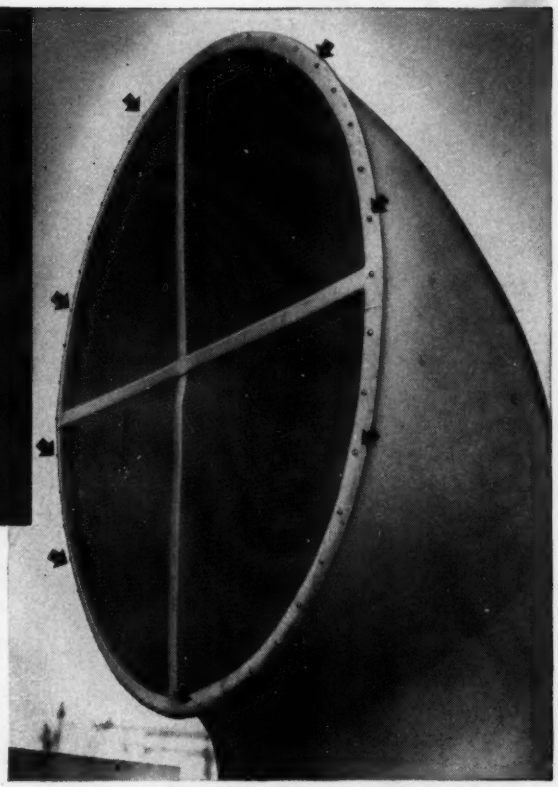
In this, the heating industry's most trying year, dealers and service men everywhere can tell Father Time what to enter on the 1943 page of his book on Perfex-built controls. Their dependability and freedom from service troubles is once more a matter of record.

But that book of Father Time's still contains many blank pages. With the closer approach of the day when we've all finished our war jobs, Perfex is planning the stories which will appear on those pages.

Those plans concern your future as well as ours. Just as Perfex-built controls have made your job easier in the past, so will our even better products help you in the years to come. And if you haven't found out about them through past experience, it will pay you to investigate Perfex-built controls before making your new start in the business of a world at peace.

PERFEX CORPORATION

402 W. Oklahoma Ave. *Milwaukee 7, Wisconsin*



THEY'RE BUILDING SHIPS

Faster

...WITH YOUR FAVORITE SHEET METAL ASSEMBLY METHOD!

LEFT. P-K Type "F" Screws, which cut standard machine screw threads as they are driven, are used to fasten metal mesh to rim, and to fasten bracket to back section of malleable iron ventilating cowl.

RIGHT. P-K Type "Z" Screws fasten a metal mesh screen to a 12 foot ventilating cowl, hold it securely in spite of punishing wind, rain, ice.

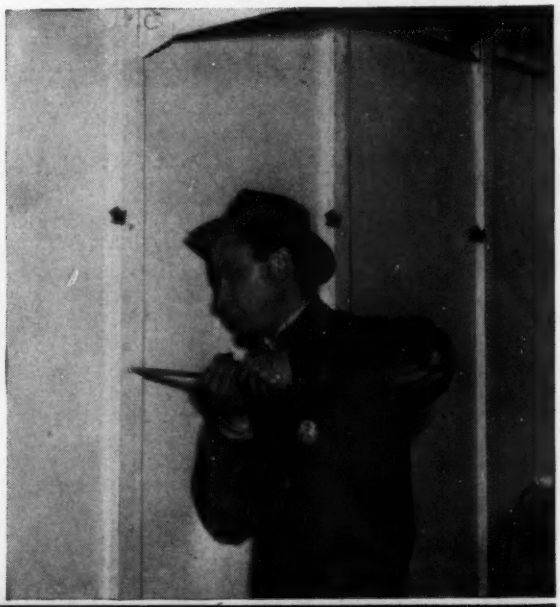
BELOW. P-K Type "Z" Screws are used for fastening 16 gauge channeling strips to 6 gauge bulkheads.

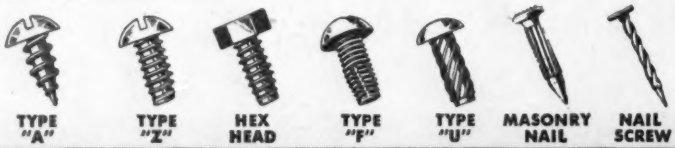
SUN Shipbuilders get Vital Speed--with Fastening Security --by using P-K Self-tapping Screws on many Jobs

Wartime shipbuilding schedules demand that every fastening job be done the simplest, fastest way. Yet, because of the severe strains shipboard assemblies must withstand, all fastenings must be dependably secure. That's why shipbuilders, like the Sun Shipbuilding and Drydock Co., Chester, Pa., are making wide use of Parker-Kalon Self-tapping Screws – to get *both* security and vital man-hour savings.

This simpler fastening method, long chosen by sheet metal workers to speed up peacetime assemblies, saves operations and time-wasting trouble wherever it is used. One easy, fast operation substitutes for tapping, running on nuts, washer placing, riveting, and welding in hard-to-reach places.

Are you getting all the advantages of P-K Self-tapping Screws? Do you know the different types that enable you to do your work the easiest way . . . do it better, too? Know them ALL . . . tell us what you want to fasten and we'll send free samples for a trial. Parker-Kalon Corp., 190-192 Varick Street, New York 14, N. Y.





PARKER-KALON *Quality-Controlled* Sheet Metal Screws

FORECAST ★ ★

OF A BRIGHT FUTURE

★

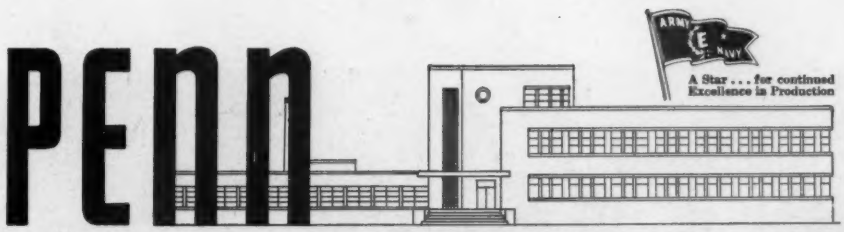
On the thundering anvil of war our fighting men are hammering out Victory.

American Industry is furnishing the tools for this job—while distributors, dealers and service men "hold the line" on the home front by making existing equipment last.

As one of our particular assignments Penn Electric Switch Co. makes periscopes for tanks, which give the crews inside a protected view of the battlefield in all directions.

Experience in the production of precision automatic controls prepared us for this job. Now, in turn, the making of battle-worthy instruments for ships and planes, as well as tanks, is broadening our experience. *The certain result will be still better Penn automatic controls when the war is won.*

Out of the roar of tank battles on the global fronts comes the promise of a bright future —in which *an improved and expanded automatic heating industry will play an important part. Penn Electric Switch Co., Goshen, Ind.*
In Canada: Powerlite Devices, Ltd., Toronto, Ont.



PENN

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

Coming Next Month!

● Once again, the January issue of American Artisan will be the big Annual Directory Number for 1944 . . . an annual issue which has become an outstanding institution of service in the field.

Each year for 10 years the editors of American Artisan have planned the January issue so that it contains a wealth of information to be used by readers throughout the entire year.

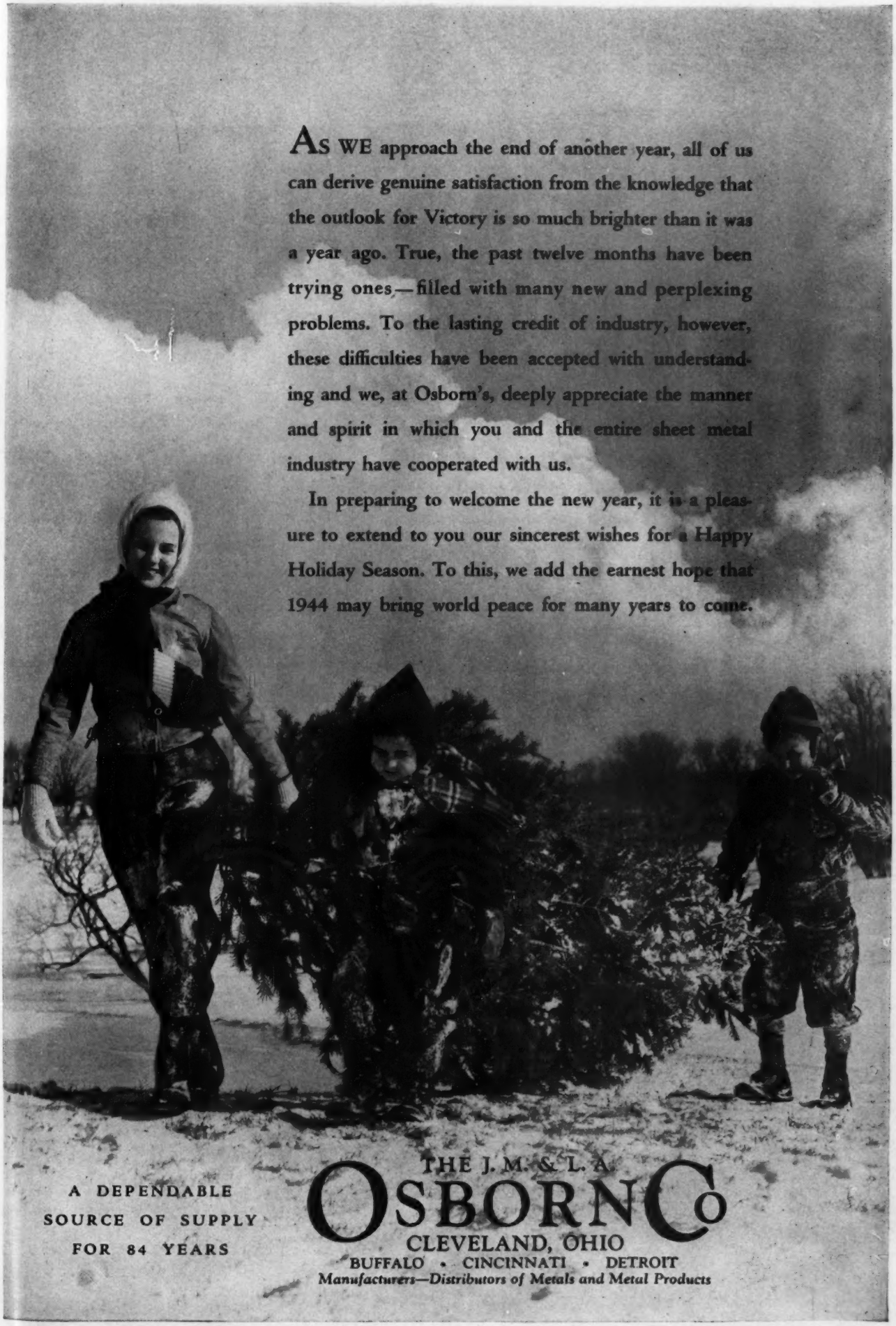
In January, 1944, the Directory Number will intensify its attention to the current and future problems of readers.

Bigger and better than ever, the January number will be another in the long list of this publication's war time services to its readers and to the manufacturers who serve them.

Watch for the JANUARY ISSUE of

AMERICAN ARTISAN

filled with information you will use throughout the year


AS WE approach the end of another year, all of us can derive genuine satisfaction from the knowledge that the outlook for Victory is so much brighter than it was a year ago. True, the past twelve months have been trying ones—filled with many new and perplexing problems. To the lasting credit of industry, however, these difficulties have been accepted with understanding and we, at Osborn's, deeply appreciate the manner and spirit in which you and the entire sheet metal industry have cooperated with us.
In preparing to welcome the new year, it is a pleasure to extend to you our sincerest wishes for a Happy Holiday Season. To this, we add the earnest hope that 1944 may bring world peace for many years to come.
A DEPENDABLE SOURCE OF SUPPLY FOR 84 YEARS
THE J. M. & L. A.
OSBORN Co
CLEVELAND, OHIO
BUFFALO • CINCINNATI • DETROIT
Manufacturers—Distributors of Metals and Metal Products

HERMAN NELSON PRODUCTS

in peace and at war

HERMAN NELSON products which were used to heat and ventilate all types of public, commercial and industrial buildings in times of peace are now at war. Since our country started preparations for this war, Herman Nelson Products have been installed in all types of army, navy and war industry projects. They have produced the excellent results and have given the reliable service that they always assured in peace time installations.

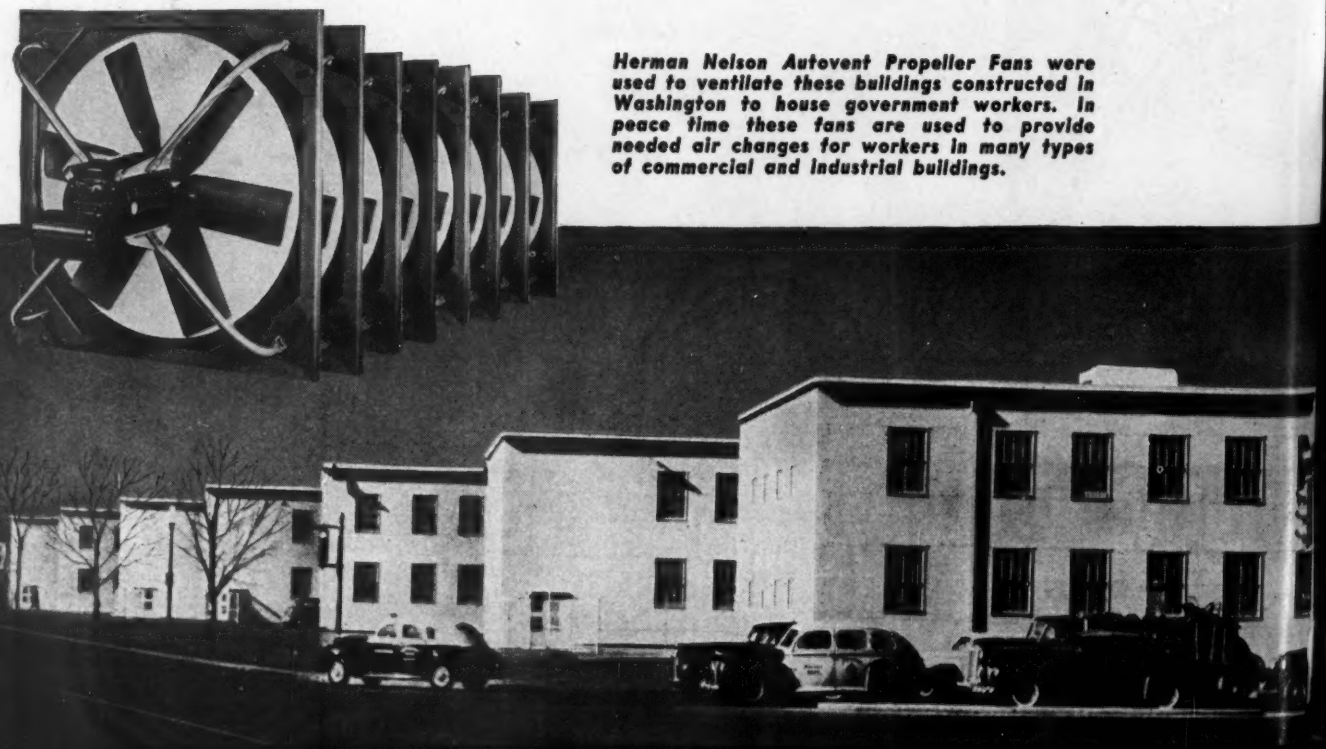
In addition, Herman Nelson has been developing and producing special heating and ventilating equipment for the solution of difficult logistic problems. This equipment will find new application when available for civilian use.

When victory has been achieved, architects, engineers and contractors can continue to look to Herman Nelson for progressively designed and well constructed heating and ventilating products.

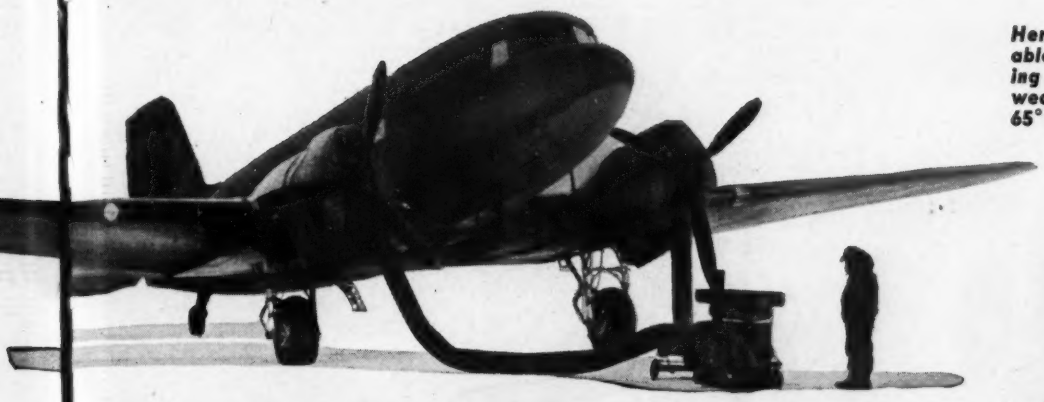
THE HERMAN NELSON CORPORATION

MANUFACTURERS OF QUALITY HEATING, VENTILATING AND AIR CONDITIONING PRODUCTS

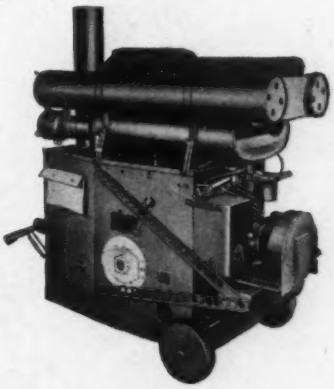
MOLINE, ILLINOIS

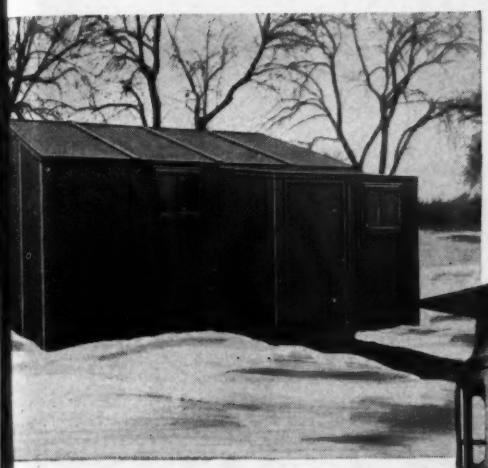


Herman Nelson Autovent Propeller Fans were used to ventilate these buildings constructed in Washington to house government workers. In peace time these fans are used to provide needed air changes for workers in many types of commercial and industrial buildings.

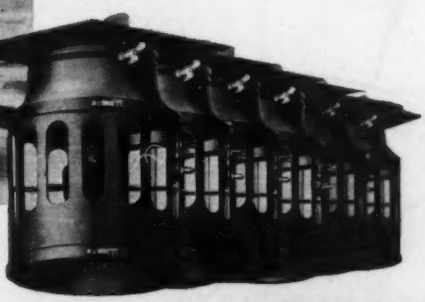


Herman Nelson developed these portable, self-powered heaters for preheating aircraft engines in severe, cold weather with temperatures as low as 65° below zero.

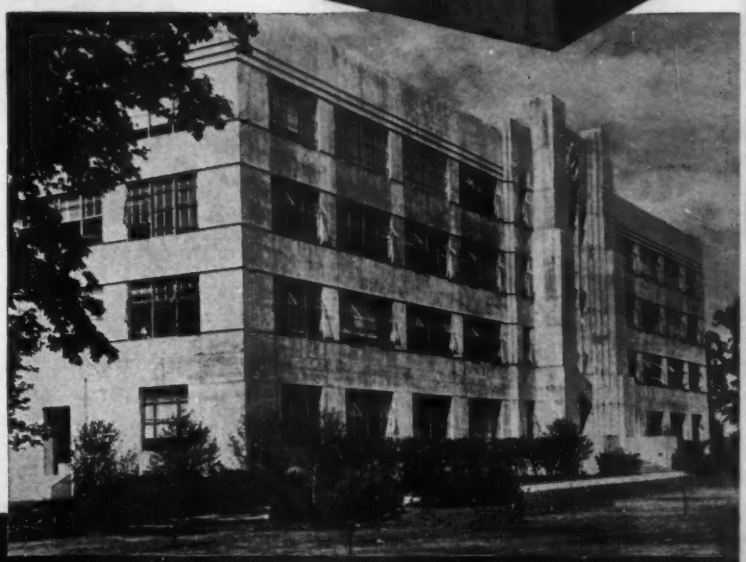




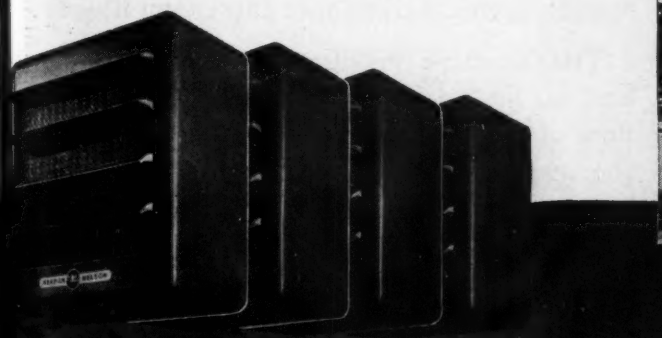
These ventilators were designed by Herman Nelson to overcome stratification in huts used by the armed forces in cold climates.



A Herman Nelson Autovent Blower provides ventilation in this Administration Building at one of our government Arsenals. In time of peace these blowers are used not only for ventilation but for many industrial process installations.



This naval station recreation building is heated with Herman Nelson hiJet Unit Heaters. After the war these heaters will provide warmth for recreational space in schools, churches, clubs and similar buildings.



"JUST MY DISH"

A DISH we did not order—but a dish we will clean up. Our appetite has now been whetted for just such a job and now that we've got the tools we'll clean these dishes as they never have been cleaned before.

It has taken some time to work up this appetite. It has been a big job to produce the necessary tools, but our partners on the home front production lines, working night and day, have done their part in sending a never-ending flow of material necessary for us to finish the task of making this a free world in which all people can enjoy liberty.

The Luxaire production facilities have had no let up in turning out a continuous flow of weapons and materials that go all the way from the barracks to the fighting fronts and there will be no let up until our job is done. Our job is VICTORY.

BUY MORE WAR BONDS AND STAMPS

Luxaire

WARM AIR FURNACES . . . AIR CONDITIONING UNITS . . . COAL . . . GAS . . . OIL

THE C. A. OLSEN MANUFACTURING COMPANY **ELYRIA, OHIO**

Your Patience Helped Us Win the ARMY-NAVY "E"

While the citation mentions only the management and workers of Crescent Tool, we could not help but think that there should have been a third representative on the platform when our "E" Flag was presented.

For without the patience and understanding of our old customers — Jobbers, Dealers and Users alike — we doubt if that flag of merit would ever fly over our plant.

To our good friends then . . . to you who have helped us build our business through good years and bad . . . we say: this is your honor as well as ours. The orders that were only partially filled, the deliveries that were slow and the correspondence that was answered tardily, all helped in giving the fastest possible service to the armed forces. The minute there is the slightest slackening in their need, we will again increase our efforts in your behalf. That, we are sure, is the way you want it done.

CRESCENT TOOL COMPANY, JAMESTOWN, N. Y.

CRESCENT TOOLS
Give Wings to Work

THE WOOLWORTH TOWER REPORTS ON ITS *BATTEN SEAM COPPER* ROOFING

When the Woolworth Tower . . . for many years the world's tallest building . . . was constructed in 1911, it was roofed with copper, installed with batten seams.

According to Frank A. Grace of the contracting firm of Hermann & Grace which installed the roof over 30 years ago and has taken care of maintenance during recent years, not a single sheet of copper has ever been replaced.

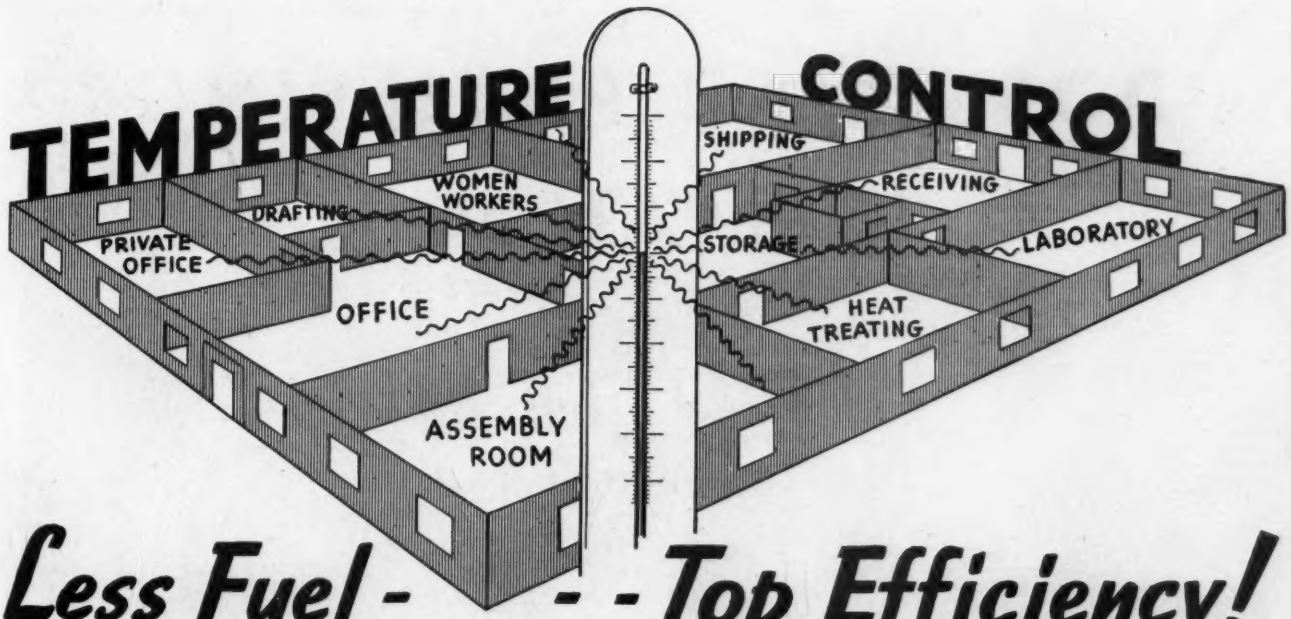
Once again copper has proved its claim of unsurpassed durability . . . and once again copper has reflected credit on those who specified it and installed it. 4347

KEEP ON BUYING MORE WAR BONDS

ANACONDA *Anaconda Copper & Brass*

THE AMERICAN BRASS COMPANY—General Offices: Waterbury 88, Connecticut

Subsidiary of Anaconda Copper Mining Company • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ontario



Less Fuel - - - Top Efficiency!

with DUX-SULATION

Temperature control is the goal of all Heating Engineers. Asbestos protected Dux-Sulation, the all-purpose insulation helps materially in attaining this goal by providing a 1/2" blanket of insulation around ducts which stops loss of heat from the ducts. With Dux-Sulation the duct that supplies that hard to heat office or workroom will supply it with its full share now without "firing up"! That easily heated room will not be overheated as the ducts that pass through are not now giving off extra heat.

In this way by proper regulation of the duct damper temperature control is possible and a direct saving of vitally needed fuel is obtained.

Dux-Sulation also lowers maintenance costs and protects metal ducts against CONDENSATION and rust — not to mention the increased efficiency of workmen and office personnel.

Dux-Sulation can easily be applied to your existing air conditioning duct work without interrupting its operation and without inconvenience. Requires no maintenance and lasts indefinitely.

Dux-Sulation can be given any type of surface treatment and is attractive when installed.

Preserve your Ducts, don't let them RUST by ordering Asbestos Protected DUX-SULATION today from your local Heating Supply House.

Immediate shipment in any quantity. Get the most out of your Air Conditioning System

DUX-SULATION IS

A flexible insulating blanket 1/2" thick, having a K factor .27 B.t.u. Comes complete with corner tape and adhesive for cementing on to sheet metal duct work. Dux-Sulation comes 36" wide in a roll containing 100 square feet. Easy to apply and a very efficient insulation against temperature losses, condensation and noise travel. Will not rot, chip or crack.

Write for Bulletin No. 407-A

4101 WEST TAYLOR ST. **GRANT WILSON, INC.** CHICAGO ILLINOIS

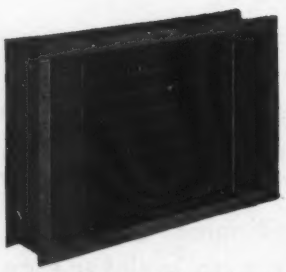
POST WAR PLANNING DEMANDS

AEROFIN
Heat-Exchange Surface

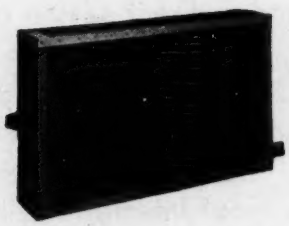
CLEANABLE TUBE UNIT designed for periodic cleaning when necessary. 12, 18 and 24 tube face.

UNIVERSAL UNIT, 1-Row and 2-Row Units. "S" bend construction—headers on opposite ends.

CENTRIFUGAL HEADER UNIT, showing 2 inlet and 2 outlet headers for a 37-7/16 inch Unit.



BOOSTER UNIT designed for either vertical or horizontal air-flow and for working Steam-Pressures up to 200 lbs. gauge.



FLEXITUBE UNIT, designed for either vertical, horizontal or flat position. 12 and 18 tube face.

Write for complete technical literature on your specific problem.

AEROFIN CORPORATION

410 S. GEDDES ST., SYRACUSE, N. Y.

Chicago Detroit New York Philadelphia
Dallas Cleveland Toronto

The products to which we devoted our peace-time energies are essential to human health and comfort. Their application to the American way of life helped increase the span of life.

However, war imposed new and urgent requirements which all industry had to meet. Among our facilities devoted to important war production is our Elyria Plant where SUNBEAM Warm Air Equipment was made. It is now devoted entirely to the production of vital magnesium castings for planes, for which there is the greatest need to increase and speed plane output.

After Victory the manufacture of SUNBEAM Warm Air Equipment will be promptly and vigorously resumed. War alone has caused the interruption. Our conception of the post-war period does not call for nor contemplate any change in our pre-war method of distribution.

AMERICAN RADIATOR & Standard Sanitary
New York CORPORATION Pittsburgh

Snug as a Bug in a Rug..

IN SPITE of bitter cold and biting wind in some of our Arctic outposts, our fighting men can still keep warm. Just inside the tent flap is warmth that defies the elements and brings comfort and relaxation when long watches are over.

All over the world, wherever our fighting men are stationed, will be found furnaces, ten heaters, water heaters and cooking ranges equipped with "DL" Float Valves.

Reliability of operation and ease of cleaning and servicing make "DL" Float Valves in demand by manufacturers of this type of equipment.

When oil burning furnaces again appear on the market, make sure the line you select is equipped with "DL" products.

DETROIT LUBRICATOR COMPANY *General Offices:* **DETROIT 8, MICHIGAN**

Division of American Radiator and "Standard" Sanitary Corporation

Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators

Vol. 112 American Artisan No. 12

Let's Keep Control of Furnace Distribution

IN THE presentation of AMERICAN ARTISAN'S suggested plan for the equitable distribution of a minimum of 200,000 replacement furnaces in 1944 in the November issue, we pointed out that our industry should try to keep distribution on a voluntary basis in order to avoid any form of governmental rationing. We stated that it is our belief that if the industry will cooperate, at least 90 per cent of the distribution can be through our customary channels of manufacturer to jobber to dealer, leaving not more than 10 per cent or 20,000 furnaces to be distributed through some sort of central clearing house whose duty shall be to take care of "hardship" cases.

In this issue the tabulation is continued for some 9½ states constituting the second heaviest user area—the northeastern states.

If anyone questioned our insistence on keeping distribution on a voluntary basis, our report in this issue on the experience of the stove industry under rationing ought to prove that our insistence is more than justified. If the stove industry is finding faults with rationing, this industry is likely to—to a much greater degree.

The tabulation presented in November and continued in this issue is only the base for a suggested plan. That any such distribution can be carried through in every county, without a single upset, of course, is too much to hope for. But it is either a case of getting these 200,000 furnaces fairly distributed voluntarily or accepting rationing.

We believe that the industry can do most of the job because our survey shows many more furnaces than 200,000 needed. The problem for each dealer, then, probably will be to decide who gets a new furnace and who must get by with a repair.

We also believe that each dealer knows pretty well just where he stands in relation to all the other dealers in the county in number of furnaces replaced each year. Having some idea of the total number of furnaces replaced in the county in an unrestricted year and knowing from our tabulation how many furnaces the county is entitled to, it should not be too difficult for each dealer to arrive at a number of furnaces he should have for replacement.

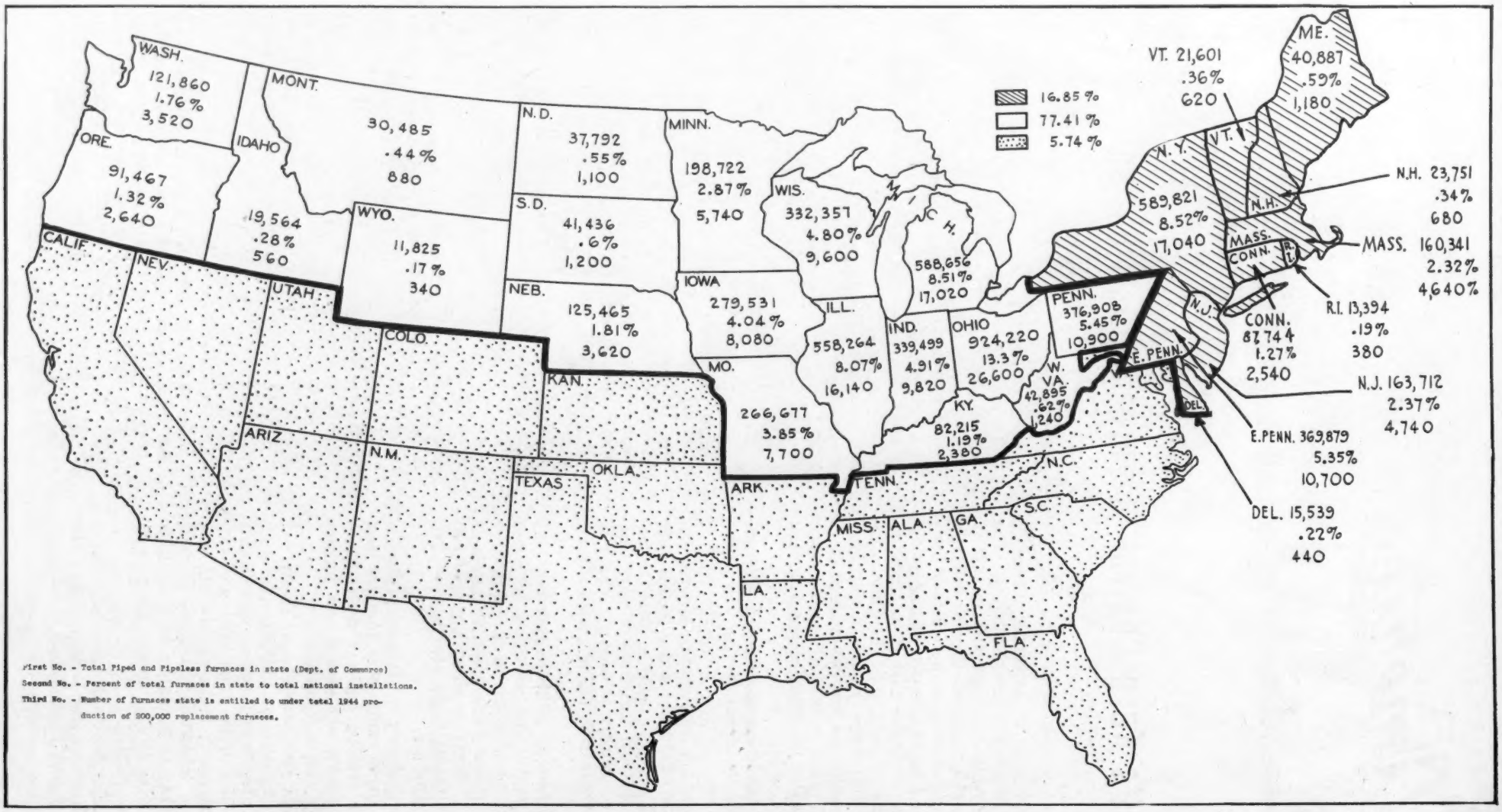
If, as we suspect, most dealers' numbers of furnaces will be fewer than he would like to have, it is going to require some patriotism from dealers if we are to avoid rationing.

There is a simple plan, we think, which would go a long way to lick this problem. All the dealers in the county installing replacement furnaces should get together in a meeting. Each dealer should bring his list of owners who need a furnace. He should know which ones are "musts" and which may be repaired. These "musts" should be added up in the meeting and the total compared with the county's quota. If the "musts" are fewer than the quota, include the difference as border-line cases. If the "musts" total more than the quota, see if the difference can be made up from the "hardship reserve" suggested in the November issue. For once in our lives, in view of all the headaches of manpower and material shortages, there should be no hesitancy in laying the cards on the table.

It is our further suggestion that, if possible, the work be apportioned on some basis of calendar quarters. This assumes that the toughest headaches have already been taken care of and that, beginning with January 1, we can inaugurate some semblance of an orderly replacement schedule to be followed throughout 1944. With furnace production curtailed, with manpower shortages dragging work weeks into the future, it should be to everyone's advantage to schedule the work in some orderly fashion. Home-owners probably will be glad to know that some such program is in operation and that "catch-as-catch-can" is out for the duration.

A scheduling of this sort has another advantage. It is quite possible, in fact, this publication firmly believes, that we will have more than 200,000 replacement furnaces in 1944. If this comes to pass, there will be more furnaces available in the second and third quarters than we now anticipate and each contractor can increase his schedule accordingly. It well may be that by the next heating season, through plans of this sort, there will be no "hardship" cases next winter and the industry can look back on an orderly, profitable 1944.

This industry has been, we think, properly recognized by OCR as essential; AMERICAN ARTISAN feels that OCR has gone a long way already to insure against hardship this winter and will go even farther for next winter. This being so, is there any good reason why the industry should not, in turn, do its utmost to fairly serve the American public? It is an opportunity to show what we can do and to contribute in some measure toward winning the war.



The legend shows area 1 (November issue) requiring 77.41% and area 2 (this issue) requiring 16.85% of the replacement furnaces. These are OCR's figures based on OCR's formula described in the November issue. American Artisan's figures are less than these percentages because our calculations are on a "straight-in-use" basis. Contractors may expect, then, to get in each county approximately 10 per cent more furnaces than our tabulations show. However, American Artisan's county figures can readily be used to determine how many replacement furnaces will be available in each county and the additional 10 per cent will serve to satisfy "hardship" cases which will arise unexpectedly during 1944.

We Should Try to Keep

Replacement Furnace Distribution On A Voluntary Basis

IN THE November issue, the basic problems of equitable distribution of 200,000 replacement furnaces in 1944 were discussed and a tabulation for 18½ states was presented showing, by states and counties, how furnaces can be equitably distributed on the basis of number of furnaces in use.

As stated in the November issue, possibly 90 per cent of the replacement furnaces to be available can be satisfactorily distributed through our customary manufacturer-jobber-dealer channels if everyone in the industry will cooperate.

This will leave about 10 per cent, or 20,000 replacement furnaces, to be distributed in some manner which will make these furnaces available to dealers who cannot obtain them from customary sources of supply. It was suggested, in November, that some form of "reserve" or "pool" supplied by all the manufacturers and distributed by some agency which will pass upon the dealer's application and assign shipping orders to some producer is one method whereby these "hardship" cases can be fairly handled.

If some such plan of voluntary distribution is not put into effect and if it becomes evident next year that some dealers have more furnaces than they are entitled to, whereas others cannot obtain furnaces, then Washington, with full justification, will have to apply some form of control.

We do not want compulsory control if we can avoid it.

Rationing Has Its Complications

There is evidence that rationing, as such a form of complete government control, is not completely satisfactory and is accompanied by complications which this industry will be wise to avoid.

Take, for example, the experience of the stove industry.

The stove industry, for several months, has been operating under Ration Order 9A. Ration Order 9A is supposed to be a simple plan for getting stoves to needy users by rationing through local OPA offices. But the stove industry—particularly manufacturers and jobbers—are finding that the plan is not so simple and is creating many dislocations in production and distribution. So strained has become the situation that the Trustees of the Institute of Cooking and Heating Appliance Manufacturers have outlined their objections to OPA as follows:

1—The program was expected to stimulate stove production, but after three months of operation conversion to stove production has been alarmingly slow due to labor shortages, delays in material deliveries and difficulties in organizing production lines.

2—Rationing under the program has been fairly successful at the dealer level, but at jobbers' and manufacturers' levels the whole set-up is becoming a headache because

A—The procedure is cumbersome and requires much paper work.

B—The procedure is too slow.

C—Manufacturers must wait on the flow-back of certificates before they can plan production.

How Stove Rationing Functions

3—The program intends that a home owner needing a stove applies to his local OPA rationing board and obtains a certificate; he turns this over to his dealer for a stove. The dealer, taking the stove from his inventory, sends the certificate to his jobber to maintain his stock. The jobber, in turn, maintains his inventory by sending the certificates to the manufacturer. Jobbers and manufacturers are finding that there is much delay caused by improperly endorsed certificates, orders not completely filled in, etc. Also, lapse of time between the date of sale and receipt of certificate by the producer. The manufacturer must acknowledge the order within three days and must give an estimated delivery date—no small chore in these days of scarcity of manpower.

4—Rationing is no cure-all for labor shortages in shop or store, for too-low prices and does not insure smooth flow from producer to user.

5—Ration Order 9A specifies that in cases of doubt the home owner must furnish "expert testimony" that his stove cannot be repaired and must be replaced. This rule is easily abused by a dealer and is open to interpretation by each local OPA board.

In this connection it should be pointed out that if "expert testimony" is a part of any rationing of furnaces, no home owner will be capable of judging whether his furnace can be repaired or must be replaced, and a "testimonial" might be needed for practically every job. After all the effort expended to remove "certification," "paper work" and "signatures" from P-84, our industry should be in favor of a voluntary plan which removes these time consuming requirements.

Distribution Is Rationing's Problem

6—Perhaps the worst fault of the stove rationing program lies in the problems of inventory and distribution.

In explanation of this statement, the stove industry reports that Order L-23-c proposes to provide the materials for 4,300,000 stoves—which is slightly more than half a normal year's production. (This is somewhat comparable to the furnace situation.) The rationing order, on this basis, is assumed to give dealers about half the number of stoves sold in a normal year.

States the stove industry: "It is surprising to note that allowable inventories range from a minimum of 4 per cent on gas ranges and oil heaters to a maximum of 17 per cent on coal heating stoves. Assuming that the annual turnover of a dealer's inventory on cooking ranges might be four times and on heating stoves two or three times, these allowable inventories are inexplicable. There is also the possibility that a dealer may have his entire allowable inventory in stock at present and that his inventory may be composed entirely of de luxe gas ranges, whereas he requires Victory models. He can secure an adjustment only by following a complicated procedure. He must appeal to his local OPA board, but that board may not act, but must send his application to the district OPA, which may attach a recommendation and then forward the entire file to Washington for decision. The selling season may be over before a decision is rendered."

Rationing "Kills" Dealer Selection

Finally, and very much to the point, the stove industry has found under rationing that "no stove manufacturer objects to directives such as were issued last winter instructing him to ship stoves into localities where they are most needed, but he has good reason to object to any order which obliges him to deliver his merchandise to dealers with whom he would not do business in normal times and dealers who may not be competent to install and service his merchandise. We recommend that manufacturers be permitted to ship to their normal outlets except as WPB shall direct that merchandise be sent into areas where shortages exist."

This statement of the stove manufacturers, after several months of experience with full controlled rationing, should be digested by everyone in the furnace industry. If rationing breaks down for a comparatively simple piece of merchandise like a stove, how much more to be avoided, if possible, should be furnace rationing.

The evidence from the stove industry (which is fairly comparable to our industry) is that rationing, in itself, is no cure-all for distribution problems nor any guarantee that every hardship case is taken care of. And the conclusion should be that if the furnace industry, through its customary channels of distribution, can keep home owners comfortable, everyone in the industry should strive to keep distribution in our own hands and out of rationing.

AMERICAN ARTISAN'S tabulation of equitable quotas of replacement furnaces is offered as a base for such a voluntary plan. The tabulation for 18½ states (the heaviest concentration of furnaces area) appeared in the November issue. On following pages the second heaviest user area—9½ states—appears.

Furnaces Installed by States and Counties and Replacement Furnaces Available in 1944

(Area 2) (On Basis of 200,000 Production)

MASSACHUSETTS

No. 1	Total Furnaces Installed	160,341
No. 2	% of National Total	2.32%
No. 3	Allotment of 200,000 Quota	4,640

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Barnstable	1,404	.88	41
Berkshire	3,056	1.91	89
Bristol	7,924	4.94	229
Dukes	178	.11	5
Essex	25,565	15.94	740
Franklin	3,396	2.12	98
Hampden	11,955	7.46	346
Hampshire	3,356	2.09	97
Middlesex	45,650	28.47	1,321
Nantucket	116	.07	3
Norfolk	15,585	9.72	451
Plymouth	5,907	3.68	171
Suffolk	23,285	14.52	674
Worcester	12,964	8.09	375

DELAWARE

No. 1	Total Furnaces Installed	15,539
No. 2	% of National Total	.22%
No. 3	Allotment of 200,000 Quota	440

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Kent	1,172	7.54	33
New Castle	12,998	83.65	368
Sussex	1,369	8.81	39

NEW HAMPSHIRE

No. 1	Total Furnaces Installed	23,751
No. 2	% of National Total	.34%
No. 3	Allotment of 200,000 Quota	680

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Belknap	1,502	6.32	43
Carroll	685	2.88	20
Cheshire	2,177	9.17	62
Coos	1,759	7.41	50
Crafton	2,282	9.61	65
Hillsborough	5,348	22.52	153
Merrimack	3,032	12.77	87
Rockingham	3,737	15.73	107
Strafford	1,810	7.62	52
Sullivan	1,419	5.97	41

RHODE ISLAND

No. 1	Total Furnaces Installed	13,394
No. 2	% of National Total	.19%
No. 3	Allotment of 200,000 Quota	380

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Bristol	328	2.45	9
Kent	1,705	12.73	48
Newport	723	5.40	21
Providence	9,622	71.84	273
Washington	1,016	7.58	29

NEW YORK

No. 1 Total Furnaces Installed..... 589,821
No. 2 % of National Total..... 8.52%
No. 3 Allotment of 200,000 Quota..... 17,040

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Albany	6,435	1.09	185
Allegany	2,471	.42	71
Broome	21,645	3.67	625
Cattaraugus	5,583	.95	162
Cayuga	8,226	1.39	237
Chautauqua	11,387	1.93	329
Chemung	11,317	1.92	327
Chenango	3,764	.64	109
Clinton	1,686	.29	49
Columbia	2,198	.37	63
Cortland	4,177	.71	121
Delaware	3,326	.56	95
Dutchess	6,947	1.17	199
Erie	85,902	14.56	2,481
Essex	1,242	.21	36
Franklin	1,869	.32	55
Fulton	5,258	.89	151
Genesee	5,931	1.01	172
Greene	1,187	.20	34
Hamilton	213	.04	7
Herkimer	6,931	1.18	201
Jefferson	10,658	1.80	307
Lewis	1,892	.32	55
Livingston	3,581	.61	104
Madison	4,555	.77	131
Monroe	83,044	14.07	2,398
Montgomery	4,380	.74	126
Nassau	12,238	2.07	353
Niagara	21,741	3.69	629
Oneida	27,545	4.67	796
Onondaga	52,116	8.84	1,506
Ontario	5,859	.99	169
Orange	8,049	1.36	232
Orleans	3,766	.64	109
Oswego	7,824	1.33	227
Ostego	4,506	.76	130
Putnam	1,101	.19	32
Rensselaer	6,011	1.02	174
Rockland	3,402	.58	99
St. Lawrence	8,072	1.37	233
Saratoga	4,033	.68	116
Schenectady	9,031	1.53	261
Schoharie	929	.16	27
Schuyler	797	.14	24
Seneca	1,819	.31	53
Steuben	8,247	1.40	239
Suffolk	12,992	2.20	375
Sullivan	1,704	.29	49
Tioga	2,576	.44	75
Tompkins	4,638	.79	135
Ulster	6,113	1.04	177
Warren	3,705	.63	107
Washington	3,063	.52	89
Wayne	6,320	1.07	182
Westchester	9,368	1.59	271
Wyoming	3,540	.60	102
Yates	1,383	.23	39
New York City	41,528	7.04	1,200

MAINE

No. 1 Total Furnaces Installed..... 40,887
No. 2 % of National Total..... .59%
No. 3 Allotment of 200,000 Quota..... 1,180

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Androscoggin	2,823	6.90	81
Aroostook	3,585	8.77	103
Cumberland	6,019	14.72	174
Franklin	968	2.37	28
Hancock	1,599	3.91	46
Kennebec	4,543	11.11	131
Knox	1,836	4.49	53
Lincoln	750	1.83	22
Oxford	1,924	4.71	56
Penobscot	5,957	14.57	172
Piscataquis	1,371	3.35	40
Sagadahoe	1,107	2.71	32
Somerset	2,016	4.93	58
Waldo	1,017	2.49	29
Washington	1,451	3.55	42
York	3,921	9.59	113

PENNSYLVANIA (EAST)

No. 1 Total Furnaces Installed..... 369,879
No. 2 % of National Total..... 5.35%
No. 3 Allotment of 200,000 Quota..... 10,700

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Adams	1,773	.48	51
Berks	16,518	4.46	477
Bradford	4,281	1.16	124
Bucks	8,765	2.37	254
Carbon	1,725	.47	50
Chester	8,939	2.42	259
Clinton	1,759	.48	51
Columbia	2,521	.68	73
Cumberland	5,854	1.58	169
Dauphin	12,662	3.42	366
Delaware	16,698	4.51	483
Juniata	613	.17	18
Lackawanna	7,603	2.06	220
Lancaster	15,253	4.12	441
Lebanon	4,308	1.16	124
Lehigh	9,817	2.65	284
Luzerne	14,206	3.84	411
Lycoming	9,603	2.60	278
Mifflin	2,997	.81	87
Monroe	2,418	.65	70
Montgomery	17,064	4.61	493
Montour	695	.19	20
Northampton	13,291	3.59	384
Northumberland	5,863	1.59	170
Perry	897	.24	26
Philadelphia	155,592	42.07	4,501
Pike	617	.17	18
Schuylkill	7,065	1.91	204
Snyder	972	.26	28
Sullivan	285	.08	9
Susquehanna	1,830	.49	52
Tioga	2,000	.54	58
Union	838	.23	25
Wayne	1,528	.41	44
Wyoming	1,136	.31	33
York	11,893	3.22	345

NEW JERSEY

No. 1 Total Furnaces Installed..... 163,712
No. 2 % of National Total..... 2.37%
No. 3 Allotment of 200,000 Quota..... 4,740

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Atlantic	4,125	2.52	119
Bergen	12,368	7.56	358
Burlington	9,655	5.90	280
Camden	33,265	20.32	963
Cape May	869	.53	25
Cumberland	5,625	3.44	163
Essex	6,921	4.23	201
Gloucester	8,339	5.09	241
Hudson	9,025	5.51	261
Hunterdon	1,912	1.17	55
Mercer	15,983	9.76	463
Middlesex	8,367	5.11	242
Monmouth	13,484	8.24	391
Morris	6,338	3.87	183
Ocean	3,000	1.83	87
Passaic	4,260	2.60	123
Salem	2,085	1.27	60
Somerset	3,756	2.29	109
Sussex	1,938	1.18	56
Union	8,999	5.50	261
Warren	3,398	2.08	99

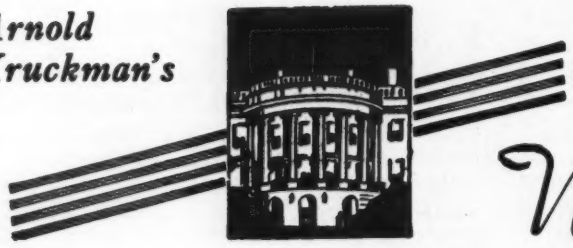
CONNECTICUT

No. 1 Total Furnaces Installed..... 87,744
No. 2 % of National Total..... 1.27%
No. 3 Allotment of 200,000 Quota..... 2,540

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Fairfield	27,802	31.69	805
Hartford	17,931	20.43	519
Litchfield	4,503	5.13	130
Middlesex	2,685	3.06	78
New Haven	28,787	32.81	834
New London	3,322	3.79	96
Tolland	1,364	1.55	39
Windham	1,350	1.54	39

[Vermont is on page 75]

Arnold Kruckman's



Washington Letter

Post War Materials Controls

THIS is written early in December, and at this moment there is no *specific* plan in any Government agency for control of critical materials, more particularly metals, after the war. Nor has Congress or the White House revealed any specific policy for such control. The whole subject of post-war controls is as yet purely in the field of broad discussion, and what you may learn from this report is chiefly the trend in the minds of those who will have a paramount influence in shaping any policy that will be formulated. Moreover, it seems fair to emphasize that post-war planning probably sounds far more immediate in its effects upon your business than it appears to us here at the scene of the din and the fray.

Who—Not How—Is Problem

Here in the Capital among the people who compose the Government war agencies, the principal problem of the moment is not *how* post-war affairs shall be administered but *who* shall administer them. This may partly account for the extraordinary emphasis upon post-war affairs. It is no secret that there is markedly less work in many war agencies. Some executives tell us that visitors have diminished by as much as 80 per cent, and that mail has fallen off comparably. Business men now know how to handle the forms and how to follow through with procedures, and whom to see in the regional or district offices when problems arise. It is logical and natural that those now employed in war agencies should hope they may continue in their jobs as long as there is some job to do.

Inter-Government gossip is that the scramble started when the Smaller War Plants Corporation, not being very busy, launched a survey of its own on post-war affairs. This brought OPA to the front, within Government itself, with the revelation that it has for some time had at work a not inconsiderable section which has been investigating post-war controls. And after he returned from the Volga, Donald Nelson expounded his idea, now widely expressed, that since WPB wound up the war production it should be the best medium to do the unwinding. It is possible, even probable, that WPB will be chosen. But the question has by no means been decided. Even Bernard Baruch has vigorously declined to enter into this phase of the discussion.

The George Fomula

The *how* of the problem is probably best outlined by the recent preliminary report of the Senate Committee on Post-War Economic Policy and Planning, headed by Senator Walter F. George of Georgia. This report recommends: "1. It is urgently necessary that immediate steps be taken to set up machinery for the coordination of all of these problems and activities and for furnishing of overall direction. 2. This should be done by a central agency and should be the promulgation and supervision of overall policies and the correlation of the activities of the various agencies handling the mechanics of these problems. 3. The Congress should lay down the broad policies under which the problems should be handled. 4. The various contracting and procurement agencies should be the operating agencies to accomplish termination of their respective contracts and to dispose of their respective surpluses according to policies established by Congress and by the policy-making central agency. It is the opinion of this committee that these principles, to be enunciated by Congress, should make it perfectly plain that speedy conversion from war to peace at the proper time is a matter of almost as imperative necessity as was the speedy conversion from peace to war, so that goods to fill the gaps in the civilian economy made necessary by war be promptly produced; so that the system of private enterprise again be permitted to function freely and speedily; and so that controls necessary in a war economy be relaxed with all practical rapidity."

Congress Is Studying Problem

The subject has had much interest for Congress. House Public Buildings and Grounds Committee has held hearings on the phase that affects the construction industry. The Ways and Means Committee has studied several aspects. Approximately from 10 to 15 bills have been introduced, focussed on some phase of post-war planning. Rep. Jerry Voorhis of California, who wrote the book, "Out of Debt, Out of Danger," and has written another on war economics, feels that much of the post-war problem may be solved through the intermediation of the Smaller War Plants Corporation. He thinks it is more independent and less bureaucratic than other war agencies, and has the nearest approach to the right spirit necessary to handle the affairs of the vast total of business not in the Big Business bracket. Voorhis suggests that when the time comes for post-war supervision, if any supervision is necessary, that a sure and substantial quantity of critical materials be allocated to the Smaller War Plants Corporation for distribution among the more moderately scaled enterprises. He thinks this process should have been followed since the beginning of the war, and he urges that it be adopted if the war should be prolonged.

Mr. Voorhis anticipates there may be necessity for some controls in the transition period, the period while we are between the hay of battle-cessation and the grass of peace. But he hopes the country will be

so thoroughly afraid of controls that it will make impossible anything but healthy competition and equity to smaller enterprises. He thinks some time, in the future, some cooperative controls probably will be imposed. But he believes these controls, almost inevitable by reason of the complexity of the conditions that will play on our economy, will largely be aids and readily accepted. He feels very earnestly that we should not follow the bureaucratic pattern which has grown up the past 12 years and that whatever controls there may be should rest most heavily upon utilities, transportation, highways, and similar facilities which are naturally joint enterprises.

OCR Has Been Investigating

There are similar ideas current in OCR. A. D. Whiteside has prompted his associates to study post-war problems as they affect the consumer and the manufacturer, wholesaler and retailer. Apparently the thought is that there must be some minimum of control in directing the flow of metals and other materials as a help and aid rather than as a police job. The thought is frankly not very definite in the sense of the details you find on a blueprint, but it is assumed a balance can be found to enable all industries and units to function if 1940 is accepted as the yardstick for operating levels. OCR strives to re-open civilian industries even now, so far as it is possible to do so under war conditions. Apparently the thought is that when the post-war period really arrives, the controls that will be imposed will simply be a modified form of the Controlled Materials Plan, in effect an extension of the war mechanics. The present decentralization of the operation of the Controlled Materials Plan, by placing responsibility for its application upon the men in the field, is assumed to be a step towards the post-war program.

L and M Orders to Be Relaxed

There is some basis for the hope that many L and M conservation orders may be relaxed in the not remote future when such relaxation is consonant with the tempo of the war. Over in OCR they regard the present controls as restrictive, while the controls that may survive are defined as generative, supervision designed to help and to build and to create business.

In WPB they have been holding conferences with business people, such as Eric Johnson, head of the U. S. Chamber of Commerce, and Paul Hoffman, head of the Committee for Economic Development. They apparently feel that whatever is done must be done gradually and without regimentation. It is probably reasonable to describe this school as those who feel we should go as far back to the untrammeled play of free enterprise as may be possible. They think that when the economy of the country is left to itself it has a healthy way of working out the problems that look perilous from a distance. The feeling seems to be that it is sounder to chance some inevitable inequities than to submit to the regimentation of something like Fascism or Socialism.

Apparently they are apprehensive about the possibility of the imposition of such governance if enterprise is not permitted to swing back to its pre-war pre-depression liberty. The fear of those who are nervous about the preferences that may be shown large industries, such as the automotive group, when now critical metals are loosed, is met with the declaration from men like Paul Hoffman, of the Studebaker Corporation, that the 3,000,000 units of smaller business are the grass roots of the economy, and when you destroy them you destroy the economy. They say it is to their selfish interest to see that smaller industry receives all the metals it can handle. Apparently the doctrine of essentiality which we have learned during the war will color some of this program. Consumers would be given opportunities to get those things and those services first which they need most desperately, and communities with the largest potential mass of unemployed and facilities would get the earliest breaks.

The ultimate viewpoint of optimism for your industry comes from the agencies ruled by Jesse Jones, RFC and Metals Reserves Corporation and the rest of the units which have dominated the war fiscal transactions. Over there they say that there cannot be any problems of scarcity, especially in the metals field, because we have mines full of copper, of iron, of other minerals which make light and heavy metals. Apparently they think you will have plenty steel, copper, aluminum, and any other metals you may need when the post-war period arrives. They suggest there are even now stockpiles from which increasingly you may obtain your portion of metals. On December 1 somewhere in the neighborhood of 100,000 tons of aircraft steel was reported to WPB as idle and surplus. Apparently here is one of the chief centers of industry where metals and other materials are piling up. The surplus throughout the nation is measured by the inventory of the San Francisco area alone, which was reported in December as exceeding 100,000 tons. Even back in July the excess of steel was listed as 2,296,564 tons carbon steel, 333,175 alloy steel, 176,804,375 pounds copper, and 89,622,169 pounds aluminum.

Time Will Loosen Stockpiles

Why is it difficult to get materials if there are surpluses? Because the operation of the priorities and other restrictive regulations have not yet caught up with the excess stuff ready to go on the market. And because there is red tape in every process of Government. The fact that they have stopped the production of something like the $13,000,000,000 slash in the 1944 budget, or the fact that they have large stockpiles apparently out of all proportion to the need does not necessarily mean that they are through with the things or the materials. It is quite reasonably deemed cheaper to waste millions, even billions, for things that may be outmoded overnight than to waste young lives. Finally, it is good sense to have vast reserves because you never are quite sure when you will be on the other end of the receiving line.

Barring some inspiration of genius for the post-war program, it is anticipated the worst period of industrial confusion will be late in 1945 and part of 1946. The unemployment curve is expected to go down perceptibly late in 1944, when shipbuilding takes a slump, at least in theory, and is expected to reach 9,000,000 in 1945 compared to the present 1,000,000. Home building at the rate of not less than 1,000,000 units a year is expected to take up some of the slack in 1945 and for at least five years thereafter. Road building and utility construction is considered another major source of improvement. Put in other terms, it is anticipated industrial production will go 40 per cent below war levels but will never fall less than 27 per cent above 1938. Income is not expected to fall more than 25 per cent below peak war levels and is guestimated at a minimum of 60 per cent above 1938. Savings are unprecedented, somewhere around $150,000,000,000.

NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION Says

The Future Market For Warm Air Heating

WAR born fuel shortages are probably a blessing in disguise for the warm air heating industry. Millions of people have discussed their heating and fuel problems with one another. The country has become "heating conscious" which has never been the case before. There is no telling the dollar value of all the newspaper and magazine publicity which has been released in the past eighteen months throughout the country on the subject of heating systems and fuel conservation. But surely it runs into millions of dollars and has resulted in creating a "heating consciousness" among millions of home owners and occupants of homes, apartments and flats.

It seems that the subject of home comfort, convenience and health through the use of central warm air heating has never been the subject of discussion to the extent that other consumer durable goods have been. Most people know the make of their immediate friends' automobiles and probably some electrical home devices, but I doubt that they know the make of the furnace.

Opportunities in Existing Homes

It most assuredly seems that there exists a challenge now to the warm air heating industry to capitalize on this development of consumer "heating consciousness." We should take advantage of this opportunity to make people want to modernize their present heating methods as soon as war time restrictions are removed.

In the replacement of present gravity warm air furnaces there will be the opportunity to modernize the system itself through improved piping, automatic firing and automatic temperature control. Very important will be the opportunity of modernizing an untold number of thousands and ultimately millions of present warm air gravity systems to forced warm air heating, with automatic coal, gas or oil firing and automatic temperature, humidity and filter control. To widen our marketing opportunities we will want to adopt a "trade-in" policy such as has been used so extensively and successfully in the automobile and electric appliance industries.

Competition with other industries in the post-war market won't permit us to wait until somebody's furnace breaks down or is worn out before an improvement in the heating system can be made. Improved home comfort, convenience and health will be uppermost in the minds of millions of people, but we've got to tell them what we have. If we don't, their dollars will go elsewhere for other devices and services, none of which can compete favorably with all of the benefits this industry has to offer.

Opportunities in Stove Heated Homes

Many hundreds of thousands of the existing users of the 16,000,000 stoves and circulating heaters in the United States offer unusual marketing opportunities for the warm air heating industry. Here is a natural market for the products of this industry for both gravity and forced warm air heating systems. After the first world war, hundreds of thousands of pipeless furnaces were sold to replace stoves at prices which now would be considered exorbitant. There is no reason why after this war we should not follow the pattern of the pipeless furnace market in the first world war, this time selling piped system with modern improvements.

Advantages of Present Warm Air Systems

1. Gravity and forced warm air heating systems available now are a terrific improvement over pipeless furnaces.

2. Temperature controls were a luxury twenty-five years ago. Today they are even the poor man's friend and greatly improved in quality and design. They surely must be an integral part of every warm air system now installed.

3. Complete gravity warm air heating systems engineered according to the Standard Code can be installed at reasonable prices.

4. Forced warm air heating using coal, oil or gas, engineered according to the Technical Code, can be installed in existing stove heated homes without digging out and finishing up a basement such as was required in pipeless furnace installations following World War I.

5. The comfort, convenience and health values represented today in automatically controlled gravity or forced warm air heating systems far exceeds that offered by pipeless furnaces.

6. This industry can now offer a substantially improved heating service as compared to twenty-five years ago. Complete automatic temperature control,

(*Continued on page* 68)

Interpretations, Amendments, Easements To Existing Orders

Amendment to P-84

TO CLARIFY and simplify restrictions on plumbing and heating emergency repairs, the War Production Board November 9 announced an amendment to Order P-84.

The revised order makes it clear that all orders accompanied by an OPA rationing certificate are assigned an AA-5 rating. Previous restrictions were interpreted to apply the AA-5 rating only to orders for rationed equipment which was to be used for replacement purposes.

List "A" of the order which names the items of equipment which are rationed by OPA order 9A is brought up to date and the OPA regulation itself is designated as the only authoritative statement as to what items are rationed.

Persons wishing to obtain steel and wrought iron pipe and steel sheets for use in making repairs may no longer use the CMP symbol "MRO" (maintenance, repair and operating supplies) because the maximum permitted amounts of this material which may be purchased from the jobber under CMP Regulation 4 have been increased sufficiently to meet requirements for maintenance and repair purposes.

Provisions requiring that replaced parts be turned in for salvage have been reworded to make it clear that replaced parts which can be repaired, other than on the job, should not be turned in for salvage.

The revised order makes it clear that the AA-5 rating may be used to obtain materials, equipment or parts needed to repair domestic cooking appliances, commercial cooking and food and plate warming equipment and commercial dishwashers, as well as to repair or replace equipment defined by the order as plumbing equipment or heating equipment.

◆

WPB-825 Abolished

SUPPLIERS who are required to keep inventory records under Limitation Order L-63 no longer need file Form WPB-825 (formerly PD-336), the War Production Board announced November 12.

Amendment of L-63 also provides that suppliers must keep records of total net monthly sales from stock and total inventory of supplies at the end of each month, but need not keep a separate record of each type of supplies.

Another change made by the revision clarified the meaning of the fourth exemption from the order by substituting the phrase "replacement parts specially designed to fit only one model and brand of machinery or equipment and adaptable to no other use" for the phrase "functional replacement parts for machinery and equipment."

The order now reads:

1046.1 (b) Limitation of Suppliers' Inventories (7) (e).

(e) *Records and reports.* Each supplier (other than those who are exempt under paragraph (b) (6) or (b) (7) must keep an up-to-date record of his total net monthly sales of supplies from stock, and his total inventory of supplies at the end of each month. He need not keep a separate record of his sales and inventory of each type of supplies. A record of his sales and inventory of all kinds of supplies in the aggregate will be satisfactory. In preparing his sales record he should use net selling prices, including sales from consigned stock and excluding direct shipments. His inventory record may be based either on book inventory or physical count. Inventory valuations must be at cost and must include consigned stock. The sales and inventory data required by this paragraph must be preserved for a period of at least two years, available for inspection by authorized representatives of the War Production Board. This record keeping plan has the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942. Subject to the approval of the Bureau of the Budget, the War Production Board may at any time ask for the submission of this data.

◆

New Order M-21-b-2

IN ORDER to remove an inequity caused by the definition of "warehouses" and "dealers," the War Production Board has issued General Preference Order M-21-b-2, as amended. The amended order *provides that a distributor may be classified as a warehouse as regards one product and as a dealer as regards another.* This redefinition takes care of situations in which a dealer received one product (such as nails) direct from a producer, and thus became classified as a warehouse. Such classification gave him a base tonnage in nails alone and barred him from dealing in another product (such as galvanized sheets) which he might have bought from warehouses, since the original order prohibited a warehouse from dealing in any product for which it had no base tonnage.

The amended order also provides that orders placed with warehouses by dealers shall be given the status of authorized controlled materials orders *only after acceptance* by the warehouse. This will permit warehouses to distribute available material equitably among their dealer-customers, rather than be forced to fill early orders in full to the detriment of late comers.

The revised order now reads:

962.11 (b) Definitions (8)—"Dealer" means a distributor who receives physical delivery of merchant trade products from persons other than producers for sale or resale in the form received. In certain cases a distributor may be both a warehouse and a dealer. With respect to any product group for which it has a base tonnage with a producer, such a distributor, from and after October 1, 1943, shall be considered as a warehouse and follow the warehouse procedure described in this order. With respect to any other product group, such a distributor shall be considered as a dealer and follow the dealer procedure described in this order.

(h) *Restrictions on placing orders by dealers.* Dealers may purchase merchant trade products for stock, and warehouses may deliver on dealers' orders only as follows:

(1) On or after October 1, 1943, a dealer may order for stock all merchant trade products sold during the preceding 12 months but not earlier than April 1, 1943, in accordance with CMP Regulation No. 4,

provided that such material sold has not already been replaced or ordered for stock replacement. Dealers' orders for stock replacement may be placed with wholesale distributors or with any person other than a producer. A dealer does not have to reorder the same merchant trade product he has sold, but can order an equivalent tonnage of the same or any other merchant trade product. No dealer shall use any delivery from stock to support a stock replacement order more than once.

(2) A dealer may not extend individually the allotment numbers, CMP symbols, farmers' certificates or other valid certificates received from his customers in order to purchase merchant trade products for stock from his supplier. To purchase merchant trade products for stock, a dealer must sign the following statement on the purchase order which he places with his supplier:

The undersigned hereby certifies to the seller and to the War Production Board, subject to criminal penalties for misrepresentation, that the material covered by this order is to replace in stock merchant trade products of the same weight delivered by me from stock in accordance with CMP Regulation No. 4, after March 31, 1943, and not previously ordered for replacement.

..... *By* .....
Name of dealer *Authorized official*

....
Address *Date*

A dealer's order bearing the above certification placed with a warehouse may, but need not be accepted in whole or in part. Any part of the order which is accepted shall be considered an authorized controlled material order.

◆

How to Find Materials

SAYS WPB: Any person or company who is entitled to place an authorized controlled material order for steel, copper, or aluminum (shapes and forms) and is unable to find a producer or supplier of this material, should make use of the following suggestions:

1—Check "Recovery" Branches Material Lists.—Numerous persons have been able to obtain material to fill their controlled material orders through the Recovery Branches. These branches maintain national inventory records of available materials and act as clearing houses for manufacturers who have listed excessive inventory or surplus stocks.

Steel Recovery Branch—Mr. G. R. Link, Chief, 5835 Baum Boulevard, Telephone Highland 1800, Pittsburgh, Pa.

Or Materials Redistribution Representative in local WPB offices.

Copper Recovery Branch—Mr. Morris Stein, 200 Madison Avenue, Telephone Murray Hill 3-4420, New York City.

Aluminum Division—Mr. Carl H. Burton, Tempo R Bldg., Room 2-334, Telephone Republic 7500, Extension 2950, Washington, D. C.

2—Try As Many Producers and Suppliers (Warehouses) As Practical.—Manufacturers receiving allotments for authorized production schedules should place their orders for materials and parts as far in advance of required receipt as possible. If it develops that you are unable to place your authorized orders on your regular sources of supply, so that materials may be received in time to meet your authorized production schedules, try as many other producers and suppliers as practical.

Note.—You might also request suppliers who are unable to take your orders to recommend other suppliers who may be in a position to accept them.

3—Advise Your Prime Contractor, Claimant Agency, or Industry Divisions.—When you have exhausted the possibilities suggested above, advise the person from whom you received your allotment whether contractor, Claimant Agency or Industry Division. Do this as soon as possible, especially if your customer requested you to come to him for help. He may be in a position to recommend a satisfactory solution.

4—Check with Local WPB Office.—Inasmuch as the local WPB office is probably familiar with the materials situation in your area, it is suggested that you contact there in attempting to find a supplier for your order.

5—Contact WPB Controlled Materials Divisions.—Only if necessary as a last resort, contact or have your prime contractor contact the person in the WPB Controlled Materials Division who is responsible for the type of material you require. State what steps you have already taken so that he can help you obtain a supplier.

◆

Decentralization of Forms

THOUSANDS of application forms formerly routed to the War Production Board in Washington will now be processed in the field.

Co-incidentally, a reduction in CMP paper work will have the result, after the first quarter of 1944, of eliminating two out of every three CMP 4-B quarterly applications, with authorizations made on an annual basis.

Specifically, these are the changes in regional handling of WPB applications:

PD-1A Applications: At present, field processing is limited to applications of less than $500 in value. This authority is now increased to applications up to a value of $1,000, and after 90 days, the authority will extend to applications of a value of $2,500.

Industrial Projects: On October 15, the field offices are scheduled to begin processing applications up to $10,000 in value (excepting certain types of projects), and this authority is to be increased to cases of $25,000 in value or less beginning January 15, 1944.

Emergency Assistance Applications (PD-333) — The Field offices now process PD-333s up to a value of $500. This is to be increased to $1,000 within 30 days, and to $2,500 within 60 days. The authority to grant emergency AAA ratings, however, will remain with the Washington offices for the time being.

Appeals: At the present time, the field offices handle appeals under 60 WPB "L" and "M" orders, and are permitted only to deny such appeals, or to recommend approval; they are not permitted to make outright grants on appeals. Within the next few weeks, 136 additional orders will be referred to the field, with action limited as above on 66 orders, and limited to recommendations for denial or approval on the other 70 orders.

On Our Industry's Front

Furnace Liners vs. "Equivalent Insulation"

IN THE September issue, page 45, we reported the problem of meeting FHA's requirement for a furnace liner or "equivalent insulation" as against WPB's elimination of liners and other metallic parts in furnaces for new war housing.

We have been trying, since September, to find whether or not WPB revised its ruling or what FHA approves as "equivalent insulation." The following excerpts from two FHA letters are, therefore, of interest and importance. The letters are self-explanatory.

September 11, 1943.

"We have delayed the issuance of a ruling requiring liners in furnaces in FHA properties until a possibility of a further amendment to L-22 to permit manufacturers to furnish liners on furnaces for new war housing has been exhausted.

"I believe the effective date of the new order is September 26, so that manufacturers are still permitted to supply the liner, and we hope that the matter can be cleared up before that date so that liners can continue to be included.

"The use of insulation in place of a liner presents a rather serious problem if the insulation is inside the casing for the reason that few common insulating materials are able to withstand the high temperatures likely to occur. The use of insulation on the outside of the casing presents a problem of a different kind; that is, resistance to impact. This problem, however, is no greater in the case of the furnace than it is in the case of the unjacketed boiler which is commonly covered with plastic asbestos cement or with block insulation over which a hard surface coat consisting of a mixture of plastic asbestos and Portland cement is applied. Outside insulation appears to be practical provided it is properly installed and I see no reason why it shouldn't be acceptable. Also if the insulation is able to withstand the temperature of 800 F., its use inside the casing is acceptable. Any substitute material used for a liner would likewise have to withstand high temperature."

November 11, 1943.

"There is an additional reason why we have not seen fit to issue a general letter on the furnace liner situation. This reason is that we are advised by the War Production Board that appeals from furnace manufacturers for permission to include liners are being favorably considered pending the revision of the limitation order.

"In the single instance where the question of an acceptable substitute for a liner has been raised, we have advised that insulation equivalent to that provided by liners would be achieved if the casing were covered with an incombustible insulating material having a heat transmission coefficient not greater than 0.5 B.t.u. per square foot per degree temperature difference per hour for the total thickness used (not per inch). Such insulation should cover all of the area of the casing above the grate line."

ROBERT K. THULMAN,
Mechanical Engineer, Technical Division.

Controlled Materials Reserve

BEGINNING with the first quarter of 1944, all allotments of controlled materials for construction and facilities, save to certain specified military, naval and other programs, will be made from a "central materials reserve" to be established for this purpose by the Requirements Committee and administered by the Facilities Bureau, J. A. Krug, Program Vice Chairman of the War Production Board, announced November 1.

Within the reserve to be established, maximum quantities of controlled materials will be earmarked for each claimant agency, including firm allotments for approved programs and a modest allowance for miscellaneous non-programmed requirements. The central reserve will exceed the aggregate earmarked quantities of controlled materials by an amount calculated to satisfy emergency requirements that might arise during the quarter.

Controlled materials earmarked for a claimant agency will not be transferred without that agency's approval and the Facilities Committee must approve in advance allotments from the non-earmarked portion of the reserve.

The new controls set for the first time an over-all limit on the amount of materials that will be available for construction and facilities. Previously, a claimant agency, once it had been allotted its quarterly share of controlled materials, could apply them as it wished to its approved programs.

Considerable saving of paper work and time in processing applications will result from the new method, WPB officials said.

◆

Contracts in Tight Labor Areas

AS OF NOVEMBER 7, prime contractors have been requested by the War Production Board to cut down further on the placement of sub-contracts in tight labor areas and to utilize to the utmost the less critical areas for sub-contracting.

In a letter to major prime contractors, Charles E. Wilson, Executive Vice-Chairman of the War Production Board, said:

"You have been receiving monthly letters on particular aspects of the problems of effecting more subcontracting in the less critical labor areas so as to relieve the more critical labor areas. As you well know, manpower shortages are increasing. This has required the extension of emergency measures to Akron, Detroit and Hartford, in addition to the West

Coast. The reason is to bring labor supply and production requirements into balance.

"To help forestall the necessity of further extension of stringent area controls, your cooperation is essential. This requires cutting down further on the placement of subcontracts in Group I labor areas (unless delivery is to be made to plants in the same area). Furthermore, you have a responsibility to refrain from taking sub-contracts for your plants that are in Group I labor areas, if you know of adequate suppliers in Groups III and IV labor areas."

◆

Scrap Drive Goes On

BECAUSE of the increasing amount of iron and steel scrap needed to maintain our production requirements and the fact that the recent coal strike caused an increase in the amount of scrap used in steel furnaces, the Salvage Division of the War Production Board announces that the "Victory Scrap Bank" Drive, scheduled to terminate on November 15, has been continued indefinitely.

Mills are now consuming more purchased scrap than they are receiving. Stockpiles are shrinking. Despite any conditions which may have affected results, the fact remains that the winter months lie just ahead and our inventory position is not improving.

◆

Period Two Oil Rations

RATIONS of fuel oil throughout the 33-state rationed area will remain unchanged at 10 gallons per unit for Period 2, which begins November 30, OPA announces in Amendment 7 to Supplement 1 to Ration Order 11, effective November 30.

Period 3 coupons, which also go into effect on November 30 in the midwestern and southern states under fuel oil rationing, have been similarly given a 10 gallon unit value.

The 10 gallon "par" value means that supplies are available in sufficient quantity to meet the ration demand and therefore no reduction is necessary. However, the oil supply for civilians has not improved to an extent where an increase in the value of the coupons can be made.

The coupons, the value of which was set today, are those numbered "2" and "3" on the Class 4, 5, and 6 coupon sheets used by consumers. Class 4 coupons, used mostly by small householders for heat and hot water, will continue to have a value of 10 gallons each, while Class 5 coupons, used by larger consumers, will be valid at 50 gallons each. Each Class 6 coupon, given to volume users of oil for apartments and commercial establishments, will continue to be worth 250 gallons each.

Although Period 2 and Period 3 (for the midwest and south) coupons go into effect on November 30, coupons for the first heating period, which became valid last July, may be used until January 4 to buy fuel oil.

The second heating period extends from November 30 to February 8 for all states in the rationed area except the south, where it ends on January 25. Period 3 begins January 4 in the eastern and far western area and extends until March 14. In the midwest, Period 3, which starts on November 30, also ends on March 14, while in the south it ends on February 22.

The overlapping of the heating periods, allowing the coupons for each period to remain valid throughout the entire succeeding period, was set up to eliminate many of the small delivery problems encountered by the industry last year.

In addition to the "period" coupons which are assigned gallonage values periodically on the basis of supplies of fuel oil available, the rationing plan in effect this winter also provides the householders with definite value coupons valid throughout the year. These coupons, called "change-makers" and "inventory reserve coupons," represent a sizable portion of the consumers' total ration this year.

◆

WPB-547 Replaces PD-1x

FORM PD-1X—used by distributors in obtaining priority assistance for replacing inventories—has been superseded by a new, simplified application titled WPB-547.

Intended primarily to reduce the amount of paper work involved in filling out the old form, the new application has been greatly simplified in design and appearance and is expected to expedite the filing and handling of requests.

The new form, copies of which are now available in WPB field offices, can be used immediately if desired.

Major changes in the revised form are:

1. Size of the application has been altered to permit its insertion into any standard typewriter carriage without folding and to permit answering all questions without removing the form from the carriage.

2. More space is provided in the upper right-hand corner for the applicant's name and address. When cut out, this block becomes a control card bearing the WPB case number, the date of filing of the application, and the name and address of the applicant. This improvement alone is expected to eliminate the work of several typists and will speed up the flow of cases.

3. After indicating the general type of supplies covered by the application, the distributor is now required to report his current sales and inventory figure for his entire business. The option of showing figures only for a department or a class of materials has been removed in order that a picture of the entire operation of the applicant may be secured.

4. Date and case numbers of the applicant's most recent WPB-547 or PD-1X applications covering any of the items appearing on the new application must be included. Also, the form must show whether or not ratings were assigned or whether a re-application is being submitted.

5. Previously, applicants were required to show their inventories as of December 31, 1941. They are now allowed to select any month in the period between December 31, 1941, and the month six months previous to the date of the application. Also, book or physical inventory may now be used in computing this figure.

6. All references to Order L-63 are removed from the form. Instead, certification must be made to the effect that receipt of the material included in the application will not increase inventory beyond the limits of any WPB order or regulation or beyond a practicable working level.

RESIDENTIAL AIR CONDITIONING

SECTION

DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

Air Control's policy of constantly adding new products and improving present products has placed them in a position of leadership in their field. While new products are not permissible during times of war—Air Control will offer many advancements "after victory."

Dealers and Jobbers of Air Control products have always felt confident that when better products were available—Air Control would be the *first* to offer them. Our Research Department is constantly at work on new and improved products that will offer you the finest line of products in the Heating and Air Conditioning field—your assurance that you will be the *first* in the field with the *best*.

Today Air Control is continuing to supply their dealers and jobbers with a complete line of Registers and Grilles.

If you are interested in being placed on our list for complete information on Post War products—write today! Planning today will mean security "after victory"!

the ARMS for AMERICA'S FIGHTING FORCES

Air Control Products, Inc.

COOPERSVILLE • MICHIGAN

How To Check Gravity Furnace Size And Return Duct Sizes

By S. Konzo

Special Research Professor, Engineering Experiment Station,
University of Illinois

WHEN a gravity warm air furnace system has to be pushed in order to heat some room in a house, and when the casing gets extremely hot, the usual result is an excessive fuel consumption and decreased life of equipment. One conclusion stands out like a beacon light after numerous investigations of trouble shooting of gravity warm air systems. This conclusion is that I have yet to see a trouble job in which the piping was made in accordance with Standard Code requirements. Over half of these trouble-shooting installations were deficient in the return air supply, and another sizeable proportion was due to optimistic ideas of the carrying capacity of wall stacks.

Furnace Rating of Gravity Furnaces

Many installers do not have a clear concept of what the rating of a gravity furnace means. Let us consider, for example, a furnace having a rating of 600 sq. in. of leader pipe. This given furnace if installed in the "reference" plant at the University of Illinois and operated at a combustion rate of 7.5 lb. of coal burned per sq. ft. of grate surface per hour, would deliver 600 × 136 or 81,600 B.t.u. per hour at the register face. Note that the rating of a gravity furnace is tied in with a given "reference" plant. This standard of reference is similar in its field to the standard platinum yardstick, that forms the reference mark for all yardsticks that are in use.

Rule No. 1. The rating of a gravity warm air furnace cannot be considered separately from the duct installation connected to it, and the furnace industry has adopted as its reference installation the one used at the U. of I. laboratory.

In Table 1 are shown a few values of equivalent ratings. We recommend that you begin to think of and to use the B.t.u. rating of a furnace instead of the older and inadequate "leader pipe" rating.

TABLE 1

Hourly B.t.u. Ratings of Gravity Warm Air Furnaces

Leader Pipe Rating, sq. in. (for combined first and second story applications).	Hourly B.t.u. Rating at Register Face.
300	40,800
350	47,600
400	54,400
450	61,200
500	68,000
550	74,800
600	81,600
650	88,400
700	95,200
750	102,000
800	108,800
850	115,600
900	122,400
950	129,200
1,000	136,000

Essentially, the furnace rating is a B.t.u. rating. Due to confusion in the field with the use of a leader pipe rating that requires three different ratings for each furnace, depending upon whether it is to be used for first story registers alone, second story alone, or for first and second stories, the National Warm Air Heating and Air Conditioning Association has broken away from the old "leader pipe" rating and has recommended the use of an hourly B.t.u. rating as shown in Table 1.

Rule No. 2. Furnace Rating, in B.t.u. per hour delivered at the warm air registers is equal to 136 times the leader pipe ratings, based on combined first and second story ratings.

Rule No. 3. The hourly B.t.u. ratings, as given in Table 1 and in Rule No. 2, hold for all applications: of first story registers alone, second story registers alone, or for combined first and second story registers.

Determining Approximate Rating From Grate Area

Let us suppose that you run across a furnace in which the nameplate is gone and you have no means of checking the rating of the unit. You can obtain a rough approximation of this rating as follows:

Rule No. 4. The approximate hourly B.t.u rating of a gravity furnace is equal to 1.75 × 136 × (Grate area in square inches).

Measure the grate diameter of a furnace, inside of the fire bowl at the most restricted section, and use either Rule No. 4 or Table 2.

Checking Furnace Size Against Hourly Heat Loss From House

Is the gravity furnace installed in a given dwelling adequate in size to take care of the design heat load of the house? You can get the answer in a few minutes,

TABLE 2

Approximate Hourly B.t.u. Rating of a Gravity Warm Air Furnace

Grate Diameter, in inches	Grate Area, in sq. in	Hourly B.t.u. Rating at Register Face.
16	201	48,000
16.5	214	51,000
17	227	54,000
17.5	241	57,500
18	254	60,500
18.5	269	64,000
19	284	67,500
19.5	299	71,000
20	314	75,000
21	346	82,500
22	380	90,500
23	415	99,000
24	452	108,000

Note—Use Table 1 *if rated leader pipe is known. Table* 2 *is approximate and may be* 10% *too high or too low.*

TABLE 3

Carrying Capacity, B.t.u. Serviced, of Return-Air Run

Unit No.	Duct Diameter inches	Type A B.t.u. per hr.	Types B and C B.t.u. per hr.	Type D B.t.u. per hr.	Type E B.t.u. per. hr.
31	10	11,300	9,500	7,800	5,000
32	12	16,300	13,700	11,300	7,200
33	14	22,200	18,700	15,300	9,800
34	16	29,000	24,400	20,000	12,800
35	18	36,700	30,800	25,300	16,200
36	20	45,300	38,000	31,300	20,000
37	22	54,800	46,000	37,800	24,100
38	24	65,200	54,800	45,000	28,700

Note—See Table 4 for standard sizes for each Unit Number.

TABLE 4

Return Air Ducts

Unit No.	Duct Diameter in.	Area at Shoe Connection sq. in.	Metal Grille Sizes, in. Choose One			When Joist Lining Is Used*		When Duct Is Used Choose One	
			(a)	(b)	(c)	No. of Joists Lined	Minimum Depth† in.		
31	10		....	8 x 14	10 x 12	1	7	14 x 6	12 x 8
32	12	.	6 x 30	8 x 24	12 x 14	1	9	22 x 6	16 x 8
33	14	170	8 x 30	10 x 24	14 x 16	1	12	28 x 6	22 x 8
34	16	220	10 x 30	12 x 24	.....	2	8	28 x 8	22 x 10
35	18	280	12 x 30	14 x 24	.....	2	10	36 x 8	28 x 10
36	20	340	14 x 30	18 x 24	.. ...	2	12.5	36 x 10	30 x 12
37	22	420	18 x 30	.....	... ..	2 3	15.0 10.0	42 x 10	36 x 12
38	24	500	20 x 30	.....	... .	2 3	18.0 12.0	42 x 12	36 x 14

*Based on 14-in. space between joists.
†Use full depth of joist except when joist depth is less than minimum depth required, when pan must be used.

if you use the simplified heat loss tables in the Standard Code Application Manual. (Send 10 cents to National Warm Air Heating and Air Conditioning Association, 145 Public Square, Cleveland, Ohio, and ask for New Gravity Manual). Here is the procedure to follow. It is somewhat crude, but will be adequate for purposes of checking furnace size.

(a) Obtain the square feet of net exposed wall of the entire house from the outside dimensions of the house. Multiply this exposed wall area by the factor given in Table 1 in the Manual. This gives the hourly B.t.u. loss for the walls alone.

(b) Obtain the square feet of exposed window and door surfaces, and multiply by the proper factor from Table 1 in the Manual.

(c) Obtain the square feet of exposed ceiling surface and multiply by the proper factor from Table 1 in the Manual. Do the same for any exposed floors.

(d) Obtain the cubic feet of heated space for the entire house, and multiply by the values shown in Table 1 in the Manual. (See Item 28a. For weather-stripped windows use factor shown for 0.6 air change, and for non-weather-stripped windows use factor shown for one air change).

(e) Add the preceding heat losses and you have the total hourly heat loss for the entire house. This process should not require more than 10 minutes' time for smaller houses. This estimate, although somewhat crude, is far better than trying to guess at the size of a furnace required, particularly if the house is insulated or is equipped with storm windows.

(f) Check the total hourly heat loss from the house against the rating of the furnace actually installed in the house, by means of Table 1 or Table 2.

If the furnace rating is within about 10 or 15% of the requirements, no change in size is necessary. If the existing furnace is too small, present limitations may not enable a change to be made, but the home owner should be informed of the fact. If the furnace is much too large, the duct system should be checked to see whether the piping is adequate.

Rule No. 5. An oversized furnace can give trouble, particularly if the duct system attached to it is undersized. Both the furnace and the piping should be adequate for the house, if long life of equipment is desired.

Checking Return Air Duct Capacities

If the basement is overheated in winter, and particularly if the protective coating on the casing has blistered and peeled or has discolored, the evidence points strongly to lack of air circulation through the furnace casing. The first item to check is the return air duct system.

Rule No. 6. The mere fact that the square inches of return air duct areas are the same as the furnace rating capacity is no guarantee that the return air duct system is adequate.

Rule No. 7. The mere fact that the square inches of return duct is equivalent to the square inches of warm air ducts is no guarantee that either is adequate. Both sides of the circulating system may be deficient.

We recommend the use of Table 3 and Fig. 1 in determining the carrying capacities of return air runs. Practically all of the existing return air duct systems in common use can be classified as resembling one of the five different types of return systems, shown in Fig. 1. For example, suppose that in checking a given installation we find one 18-inch duct resembling Type B, and a second 18-inch duct resembling Type E. By referring to Table 3 and following across the line marked "Unit No. 35" (18" dia. from Table 4), we find the following carrying capacities:

Unit No.	Duct Diameter	Type	B.t.u. per hr
35	18 in.	B	30,800
35	18 in.	E	16,200
		Total	47,000

Let us further suppose that we find the furnace to be a 24-inch unit, in which the grate diameter measures 20 inches. From Table 2 we find the approximate furnace rating to be 75,000 B.t.u. per hr. In this example, which is taken from an actual trouble job, the return air capacity is only 63 per cent of what it should be. We find about 28,000 B.t.u. per hr. return servicing capacity lacking. By referring to Table 3, we find that the solution would be to use any one of the following sizes, each of which would deliver about 28,000 B.t.u. per hr.

Type of return duct	Unit No.	Duct Diameter, in.
A	34	16
B	35	18
C	35	18
D	35	18
E	38	24

The standard recommended dimensions for return air shoes, metal grilles, joist liners, and return ducts for the return air system are shown in Table 4. The writer has found from actual usage that by using these tables, the return air capacities can be checked in less than five minutes' time.

One important advantage of this method of checking is that it serves to place before the homeowner a step-by-step analysis that he can follow. Figures, backed by published tables of performance, are far more convincing to a homeowner than arbitrary claims or guesses, no matter how shrewdly made.

In the next article will be given a similar check on warm air pipe sizing by the use of tables. At this point, a few typical problems and answers are given that cover the points brought out in this article. Get out your pencils and have a little fun.

Problem No. 1

A one-story house located in Chicago is 24 ft. by 30 ft. with 8 ft. ceiling, and is of plain frame wall construction. No insulation, weather stripping, or storm sash are used. Total window and door area is 200 sq. ft. What is the design heat loss?

Heat Loss Summary (Using Table 1 in Gravity Manual)

Item	Area or cubage	Factor in Table 1	Hourly B.t.u. loss
Windows and doors..	200 sq. ft.	90	18,000
Net Wall area.....	664 sq. ft.	20	13,280
Cold ceiling	720 sq. ft.	26	18,720
Infiltration	5,760 cu. ft.	1.4	8,060
			Total of about 58,000 B.t.u. per hr.

Problem No. 2

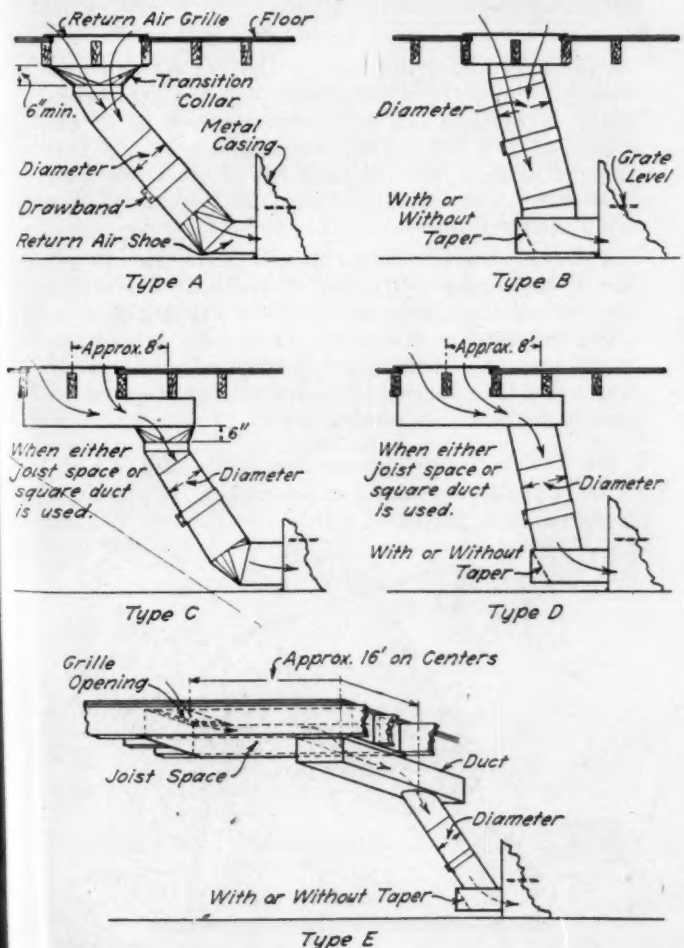
What should be the rating of the furnace to be used?

The hourly B.t.u. of the furnace should be between 55,000 and 60,000 B.t.u. per hr. at the register face.

Problem No. 3

What leader pipe rating does 58,000 B.t.u. per hr. delivery correspond to? $58,000/136 = 427$ sq. in. leader rating based on first and second story use.

Fig. 1



Five Typical Arrangements of Return-Air Duct Systems

$58,000/111 = 523$ sq. in. leader rating based on first story use alone.

Note that we have only one B.t.u. rating, but have to select the proper rating from two separate ratings based on leader pipe. The latter method of rating is confusing and is frequently misunderstood.

Problem No. 4

What grate diameter does this require in a conventional furnace?

See Table 2. A furnace having close to 17.5 in. diameter grate is required. A 22 inch furnace can be selected. A 20 inch furnace is slightly on the small side.

Problem No. 5

Suppose storm sash and storm doors are used?

The window and door heat losses become $200 \times 60 = 12,000$ B.t.u. per hr., instead of 18,000 B.t.u. per hr., and the total heat loss from the house becomes 52,000 B.t.u. per hr. The required grate diameter from Table 2 is 16.5 in., which corresponds closely to a 20 inch furnace.

Problem No. 6

Suppose the given house has an 18 inch furnace, having a 14 in. diameter grate, and no rating plate is shown?

See Rule No. 4. A 14 in. grate has 154 sq. in. The approximate rating is $1.75 \times 136 \times 154$ or 36,600 B.t.u. per hr. The furnace is too small, and will have to be forced to heat the house in severe weather. If the chimney is tight, if the draft is adequate, and if the fuel is adequate, the house will heat, but not as efficiently as a larger furnace. The life of the furnace will also not be as long as when a larger furnace is used.

Problem No. 7

Suppose the given house has a 24 inch furnace, having a 20 in. diameter grate, and no rating plate is shown?

See Table 2. The rating will be about 75,000 B.t.u. per hr., which is 30 per cent greater than requirements. The house will heat and the combustion rate will be low. If the draft is adequate the furnace will have to be carefully controlled to prevent overheating when the drafts are open. No harm will be done unless the piping is inadequate. An oversized furnace requires oversized piping to carry away the heat that is generated.

Problem No. 8

Suppose the given house has a single 24 inch return duct of Type C?

See Fig. 1 and Table 3. This corresponds to Standard unit No. 38 having a capacity of 54,800 B.t.u. per hr. and corresponds closely enough to the 60,500 B.t.u. per hr. capacity of the 22 inch furnace.

Problem No. 9

Suppose the given house has two 18 inch return ducts of Type E?

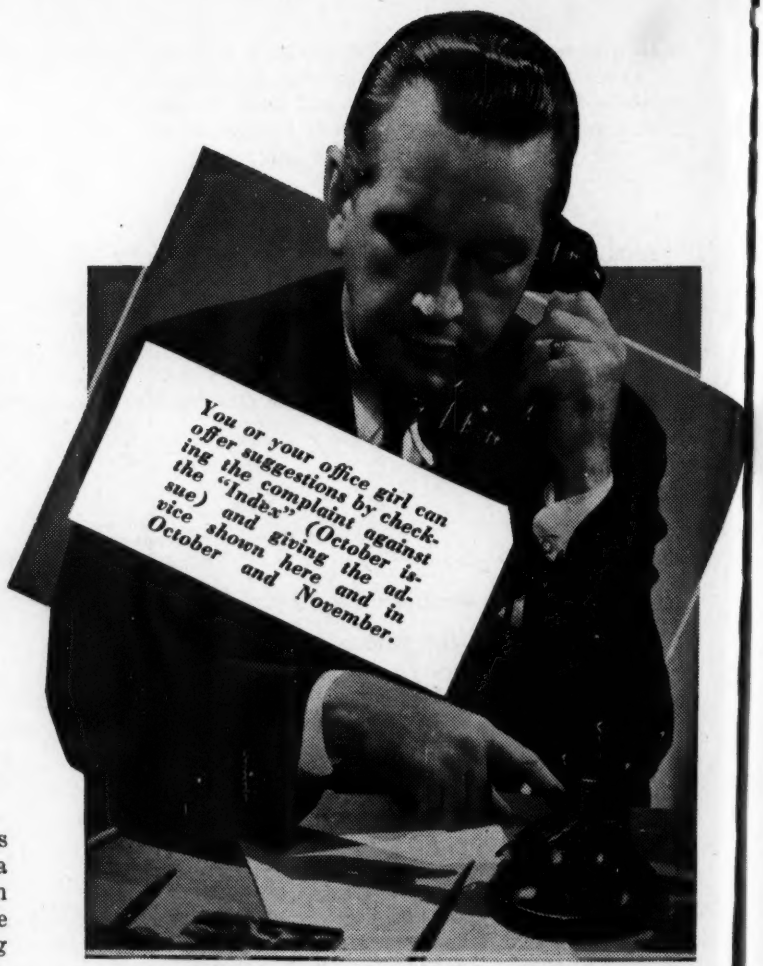
See Fig. 1 and Table 3. These two ducts correspond to Standard Unit No. 35, each having a return capacity of 16,200 B.t.u. per hr., or a total of 32,400 B.t.u. per hr., which is far below the 60,500 B.t.u. per hr. capacity of the 22 inch furnace.

Note that in problem 8, the single 24 inch duct

(*Continued on page* 51)

You Can Satisfy 80% Of Your Heating Complaints By Telephone*

[Part 3]


You or your office girl can offer suggestions by checking the complaint against the "Index" (October issue) and giving the advice shown here and in October and November.

Clinker—Cause and Remedy

1. ***Do you stir or poke the fire?***
Stirring it mixes unburned coal and ash and makes clinker. A poker can be used to punch holes in a clinker that has formed, or to push the fire down on the grate when an arched clinker holds the fire clear of the grate after shaking, but avoid mixing live coals and ashes.

2. ***Do you pull clinkers out through the coaling door or clinker door?***
There is a better and easier way to get rid of them. Using a straight poker (not one with a hook-shaped end), punch holes down through the clinker every five or six inches over its entire area and leave it in the fire. These holes let air through the clinker and it will either burn or weaken so it can be shaken through the grate the next time the fire receives attention. Pulling clinkers out of the fire is sure to make more clinker because you can't avoid mixing the burning coal with the ash.

3. ***Some people sift ashes and put the large pieces back in the fire—do you?***
(If the answer is *"YES,"* or *"SOMETIMES I DO"*)
More fuel will be wasted than saved by that practice. Ash placed on burning coal insulates the surfaces of the coal and gradually stops the burning. But while this process is going on, the temperature of the ash has reached its fusion point and clinker is formed. The clinker stops normal flow of air through the fuel bed, the coal stops burning and is lost through the grate the next time it is shaken. If you follow approved operating and grate shaking methods, very little if any unburned coal will reach the ash pit.

4. ***Are you in the habit of shutting off all draft immediately after havng full draft on?***
This method of firing contributes to the formation of clinker; in fact, it could be given first place among causes for clinkering.

If you close the draft door in the ash pit and also close off the draft in the smoke pipe, the heat being made in the fuel bed is suddenly bottled up in the fire box. The heating surface cannot absorb it fast enough so it is reflected back to the ash in the fuel bed, which then fuses or clinkers because of the high temperature.

To prevent this condition, always leave the ash pit draft door open a quarter of an inch and avoid closing off completely the draft in the smoke pipe. Also, try setting the drafts at a point where the right amount of heat is being supplied continuously and avoid the sudden rushes and sudden stops which are harmful and wasteful. (Fig. 1)

5. ***Do you burn garbage on the fire? (Fig. 2)***
This is almost certain to cause clinker. If you must burn garbage, scatter it thinly over the fire. Do not

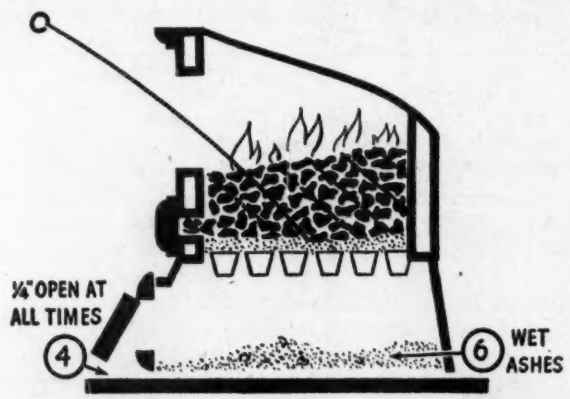


Fig. 1—Leave a little draft to hold a uniform fire and wet the ashes to reduce clinkering.

**Reprinted by permission from the booklet "Anthracite Telephone Service," by Anthracite Industries, Inc.*

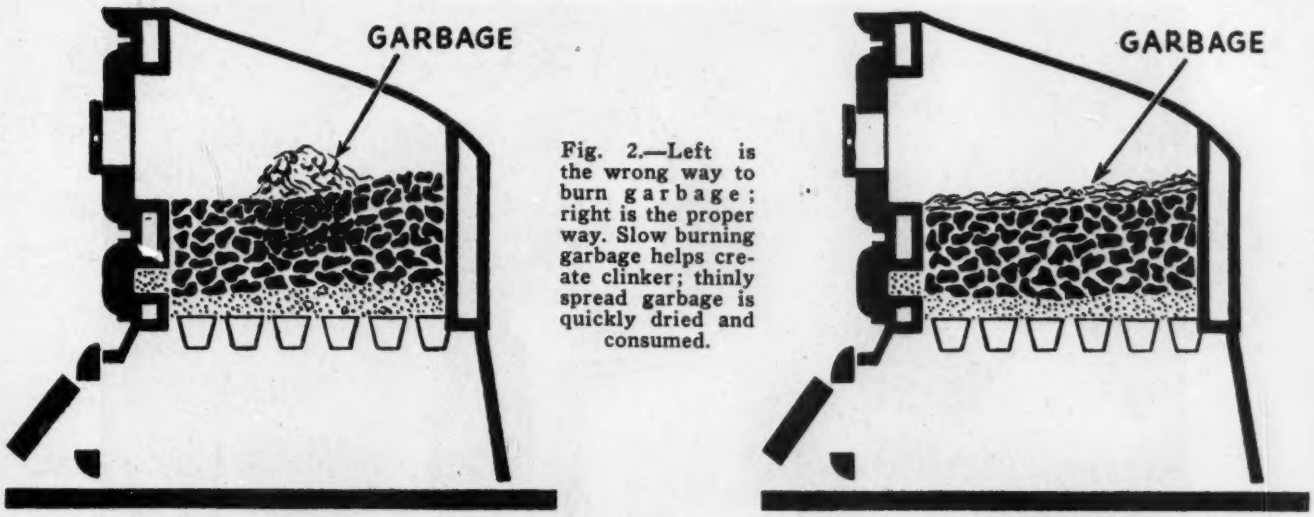


Fig. 2.—Left is the wrong way to burn garbage; right is the proper way. Slow burning garbage helps create clinker; thinly spread garbage is quickly dried and consumed.

put glass bottles or rubbish on the fire as both are clinker builders.

6. Do you moisten the ashes in the ash pit?

A small amount of water in the ash pit helps to keep down clinkering. Heat radiated from the burning fuel turns the water to vapor which is beneficial to the fire. (Fig. 1)

Fire Going Out in Mild Weather

1. If the fire is low, do you shake the grates severely before trying to bring the fire up?

Some little shaking is desirable, but just enough to loosen up the fuel bed and make it porous. Do not shake so much that the remaining live coals are dropped down on the grate because the cool air flowing through the grate may extinguish the fire completely. After loosening up the fire bed slightly, put all draft on and allow the fire to burn up.

If the surface of the fire appears ashy but there is still evidence of heat underneath, sprinkle a little fresh, dry coal on the fire, put full draft on, and let the new coal become well ignited before doing much grate shaking.

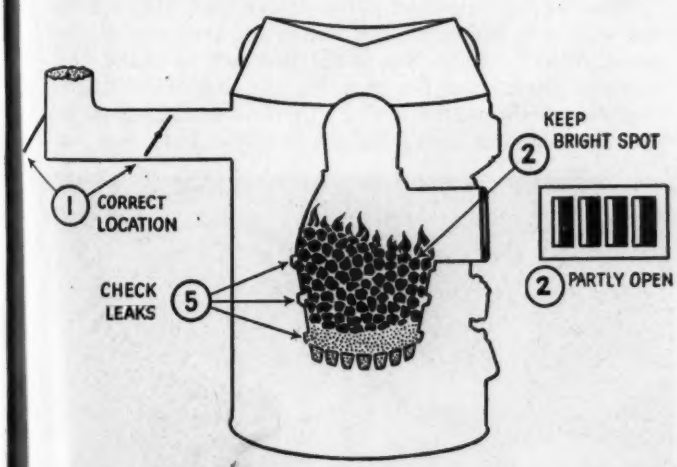


Fig. 3—Furnaces should be checked periodically for leaks and cemented. Check and turn damper should be located as shown. A little "over-fire" draft helps burn smoke and saves fuel.

2. Do you maintain a thick fuel bed or a thin one in mild weather?

A thick or deep fuel bed, most of which is ash, will be easier to manage in mild weather. A small amount of fire on a thick layer of ashes is less likely to go out than the same amount of fire on a thin bed of ashes. Always maintain a deep fuel bed even though little heat is needed.

Too Much Ash

1. Do you notice unburned coal in the ash?

The presence of partly burned coal in the ashes under normal operations usually indicates too frequent grate shaking or failure to stop shaking when the first red glow appears in the ash pit. This unburned coal adds weight and bulk to the ashes.

2. Is the ash powdered or coarse?

Coarse or formed ash is bulky and requires more cans than powdered ash. However, more ash of this type does not mean that more coal was burned.

3. Have you been burning more coal because of cold weather?

When outside temperatures are low, more coal is burned and more ash will result.

Burning Too Much Coal (Fig. 4)

1. Have you considered the effect of outside temperature on the amount of coal burned?

In real cold weather you burn more coal because you

(*Continued on page* 88)

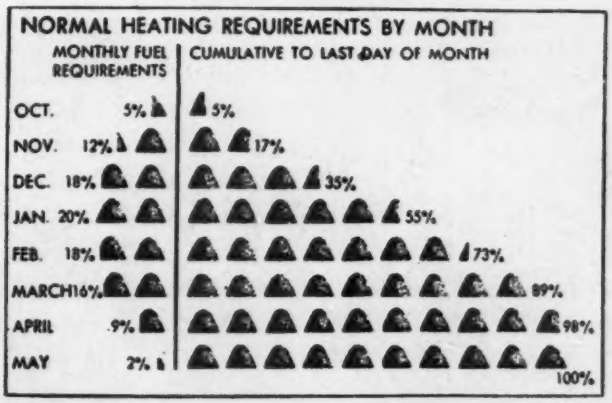


Fig. 4—Fuel consumption by months in percentage of total burned in a "normal" year.

Hal Norwood, manager of the heating department, and warm air specialist, demonstrates a stoker on the Wehby display floor.

Letters Build Service Volume

By Geo. Watson

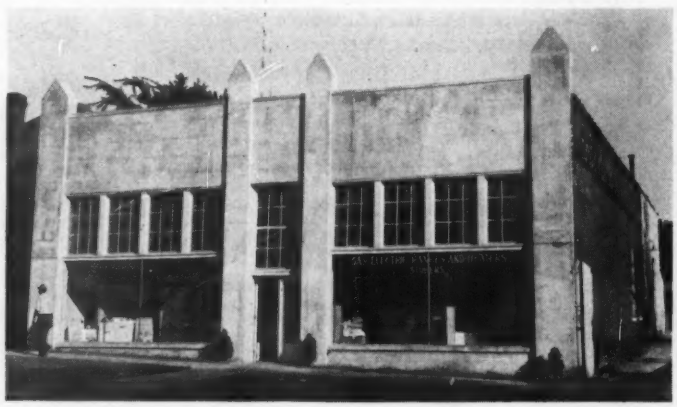
IN RECOGNITION of the growing popularity of warm air heating, the Wehby Plumbing Company, Birmingham, Ala., established a warm air department about three years ago.

This department in its first two years did a big business specializing in the replacement market, and selling upward of 100 furnaces per year. Stoker sales ran as high as 10 per month prior to the freeze. Today, the shortage of labor and materials has curtailed the operations of the department somewhat, but Charles H. Wehby, president, is sure that after the war he will continue to offer an all around heating service, including warm air, steam and hot water, in fact whatever the customer wants and regardless of the type of fuel preferred.

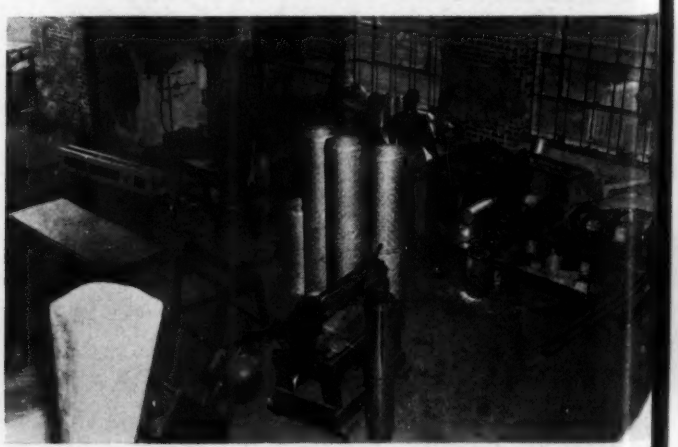
"In putting over this new department we found Uncle Sam's mail our great ally," said Mr. Wehby, who had Hal Norwood, a warm air specialist in charge of the department until he was called to the army. "We made up a mailing list of some of our old plumbing customers, adding others from time to time. We bought a mimeograph machine, so that mailing pieces could be turned out economically and efficiently.

"One point we have learned about direct mail—or any advertising for that matter—it must be continuous to be effective. Sporadic effort will not do a lot of good. We keep up a running fire of mail matter, varying our appeal to fit the seasons and our services and merchandise offered.

"One of our most effective pieces was directed to the women in the house and was begun with the catchword, WAIT. In it we asked her not to make the mistake of cleaning her curtains and draperies, washing the woodwork and doing other redecorating without first having the furnace cleaned. This was an



The building and the land are owned by Wehby, whose attractive display floor and store are distinct sales adjuncts.



View of the sheet metal shop where all duct work is built to specifications.

EQUIPPED TO REPAIR ANY MAKE FURNACE

ROOFING
GUTTERING
ENTERPRISE FURNACES
ENTERPRISE STOKERS
PEERLESS BLOWERS

Webby

PLUMBING & HEATING CO.

HAL NORWOOD
GEN. MANAGER

1919 7TH AVENUE, SOUTH
BIRMINGHAM, ALABAMA
DIAL 7-6189

PREPARE NOW

AGAINST MID-WINTER BREAK DOWNS

"Ole Man Winter" is just around the corner and this year he promises us one of his most "freezing" seasons yet.

Have your furnace or boiler checked thoroughly by expert heating men while you still have time.

We are offering you a free check on your heating plant for the next thirty days. Yes Sir! It's absolutely free and without obligation to you.

Have your furnace worked over now if it is necessary, before Winter sets in. It is much better to do it now than to have your furnace "Break-Down" on you right in the coldest part of the Winter and be forced to keep a cold house for a day or so, or be bothered with the workmen on the job.

All you have to do is to go to your telephone and Dial 7-6189 and say "Heating Service Please." Our heating man will be out to give you an accurate report on your heating plant without cost or obligation to you what-so-ever.

ACT NOW AND YOU WON'T REGRET IT!

Remember the old proverb? "A Stitch in time saves nine." The same thing applies to your furnace. Repairs in time save you many, many dollars.

REMEMBER. TELEPHONE 7-6189 and ask for "HEATING SERVICE PLEASE."

WEBBY PLUMBING & HEATING COMPANY

C. H. Webby

inspiration—we had to make such an appeal and it worked as we could tell from the number of calls we had from women. In it we offered a complete furnace cleaning job for $6.50 and a stoker cleaning job for $4.50. Of course some jobs ran more than this as there were new parts to install such as grates, asbes-

Time Payments on Plumbing & Heating Installations

GAS RANGES
GAS RADIATORS
STEAM HEATING PLANTS
AUTOMATIC GAS HEATERS
ELEC. WASHING MACHINES
ELECTRIC REFRIGERATORS

DIAL 7-6189
WEHBY
Plumbing & Heating Co.
1919 7TH AVENUE SOUTH
BIRMINGHAM ALABAMA

REPAIR KIT

Gentlemen:

Usher the New Year in right by modernizing your equipment!

In your business you are continually in need of some sort of SHEET METAL WORK and we are just the ones to do it. We have very competent SHEET METAL WORKERS, and we are noted for the quality of METAL we use in every article we turn out. Please don't think us boastful, as it has never been our policy or intention to exaggerate or overstate the workmanship or materials in our products.

Any job, whether large or small will be made to order. Call us for a free estimate on any type of SHEET METAL WORK for this is a service we cheerfully extend to you.

FOR A FREE ESTIMATE, CHECK THE ITEMS LISTED BELOW AND MAIL THIS COPY TO US AT ONCE. OUR ENGINEERS WILL GIVE YOU A PROMPT, CORRECT AND REASONABLE QUOTATION.

COOLING TOWER FOR REFRIGERATION	METAL CONTAINERS
VENTILATING SHAFTS AND DUCTS	TRUCK LININGS
VENTILATING FANS	METAL AWNINGS
METAL CHUTES	METAL SINKS
REFRIGERATOR LININGS	ROCK WOOL INSULATION
METAL FLOORING	METAL HOODS

Take advantage of this offer by calling 7-6189.

Yours very truly,

WEHBY PLUMBING & HEATING COMPANY

C.H. Webby

CHW.bs

FULLY EQUIPPED FOR EVERY TRIP

EQUIPPED TO REPAIR ANY MAKE FURNACE

ROOFING
GUTTERING
ENTERPRISE FURNACES
ENTERPRISE STOKERS
PEERLESS BLOWERS

Webby

PLUMBING & HEATING CO.

HAL NORWOOD
GEN. MANAGER

1919 7TH AVENUE, SOUTH
BIRMINGHAM, ALABAMA
DIAL 7-6189

Dear Madame:

Wait! Don't make the mistake of remodeling the interior of your home, putting up new drapries, washing woodwork, cleaning your rugs or furniture or floors, until you have had your heating plant thoroughly vacuum cleaned.

When the pipes to your furnace are dirty there is a continuous rising from the pipes, particles of lint and dust to settle on your furniture, draperies, woodwork, and etc.

TO KEEP A CLEAN HOME YOU MUST KEEP A CLEAN FURNACE!

THE CLEANING INCLUDES:

Entire furnace
All warm air leader pipes
All cold air return pipes
Smoke pipe
Base of flue
Exterior of all piping
All cold air return boots and register boxes
Restrip entire casing with asbestos stripping
Remove all ashes in furnace
Repaint all exposed castings with aluminum heat resisting liquid

All the above work for the astounding sum of $6.50
THIS PRICE HOLDS GOOD ONLY UNTIL THE 15th day of July

IF YOU HAVE A STOKER THE FOLLOWING WILL AMAZE YOU!

We oil and adjust stoker
Change the oil, grease the transmission
Adjust the feed screw
Clean inside of hopper
Pack feed screw with lubricating packing to prevent rust
Clean wind box
Clean tuyeres
Paint inside of hopper to prevent rust
Check wiring of stoker

COMPLETE JOB ON STOKER FOR ONLY $4.50

LADIES! DON'T OVERLOOK THIS PROFITABLE PROPOSITION. PHONE US NOW FOR QUICK SERVICE AND AVOID THE RUSH. PHONE 7-6189

Fully Equipped for Every Trip

tos pipe covering, filters, burned out motors, etc. Also several sales of new equipment, especially stokers resulted from these contacts. This letter was sent out after the end of the heating season in the Spring and was good only until July 15.

"Another of our letters was headed 'Prepare Now Against Mid-Winter Breakdowns,' and offered a free inspection service. On going out we then quoted our regular price (somewhat higher than the Summer special) for a complete cleaning job or for installing any broken or worn parts. We got all the calls we could handle and cashed in on the contacts.

"At a period when our heating business is somewhat quiet we dispatched a letter to business concerns apprising them of our sheet metal service. This went especially to concerns which had use for sheet metal for one reason or another such as dairies, bottling companies and restaurants. In this letter we offered to make free estimates on any sheet metal job and mentioned a number of uses to which sheet metal could be and is applied. These include ducts, chutes and shafts, also linings and flooring, awnings, sinks, metal hoods, etc. In fact the number of uses are innumerable as any sheet metal contractor knows.

"Another letter of ours which was particularly effective was addressed to various colleges and schools in our territory. It advised that we had on hand complete repairs and parts for numerous makes of furnaces and boilers including grates, doors, steam valves, traps and the like, both new and used. As we handle many modernizing jobs, we naturally come into possession of much used equipment and we find a ready market for that, especially since there is a shortage of new parts. We have the space and the facilities at our place of business for dismanteling

(*Continued on page* 80)

Pattern Development for

Air Conditioning Fittings*

By William Neubecker
Head Instructor
Sheet Metal Department, New York Trade School

Tapering Transitional Offset Fitting

A READER of the AMERICAN ARTISAN has submitted a transition problem which represents a tapering transitional offset fitting having unequal taper on all four sides, leading from a 16 x 16 inch duct to a 20 x 20 inch duct as indicated in the front and side elevations in Fig. 58 which is a reproduction of his drawing showing full size dimensions. He states that he "desires a true geometrical rule for developing the four pattern shapes, so that the joint lines between the two ducts and center transition piece will not choke or reduce the areas, as it always does when the joint lines are made horizontal as shown by *a-i* in the front elevation, also as shown in the side elevation by *a°-i°*."

When horizontal joints are used on any offset, the loss in area increases with the increase of the offset or projection. This is better illustrated in the front elevation where the proper method of drawing the joint line is shown as follows: Using *a* as center with any radius draw the arcs intersecting the angle at *b* and *c*. Using the same or any other radius with *b* and *c* as centers intersect arcs at *d*. Draw the true joint line from *a* to *d* intersecting the vertical duct line at *e* and from *e* draw the true transition line from *e* to *f*. Note the difference between the horizontal line *a-i* and the true joint line *a-e*, also the loss in area indicated by *e-i-f* when a horizontal joint line is used as *i-a*.

The greater the offset and the larger the duct size, the greater will be the loss in area when horizontal joint lines are used. The true joint line must always be the bisection of the angle as described above. As this offset has unequal taper on all four sides, it will be necessary to obtain the true miter or joint lines diagonally, by drawing a true elevation at right angles to its diagonal line in plan. Therefore in laying out this pattern shape, it is only necessary to have a front elevation and a plan view showing the full size dimensions of the offset on each side.

The front elevation in Fig. 58 has been reproduced in Fig. 59 and is shown by *A-B-C-D-E-F-G*. In practical work, on double offsets of this type, whether tapering or otherwise, the *center line* of the offset is all that is required as shown by the *heavy dotted line* drawn through the center in the front elevation. Note that the *vertical* heights of this center line have similar dimensions as called for in the front elevation in Fig. 58.

Now above the front elevation in Fig. 59 draw the plan view as shown in its proper position, making the projections of the offset on all four sides to correspond to the dimensions shown in the front and the side elevations in Fig. 58 as indicated by similar full size dimensions in the plan in Fig. 59. Having drawn the center line and plan as just described, the method of developing the pattern shapes are as follows:

The first step is to project a *true* elevation from which the true lengths and the various pattern shapes are obtained. As *1-2-3-4* in plan shows the position of the 20 x 20-inch duct and *5-6-7-8* the position in plan of the 16 x 16-inch duct, obtain the centers of these two ducts by drawing diagonal lines from the corners in both ducts (partly shown) and obtain the center *O* of the large duct and the center *P* of the small duct.

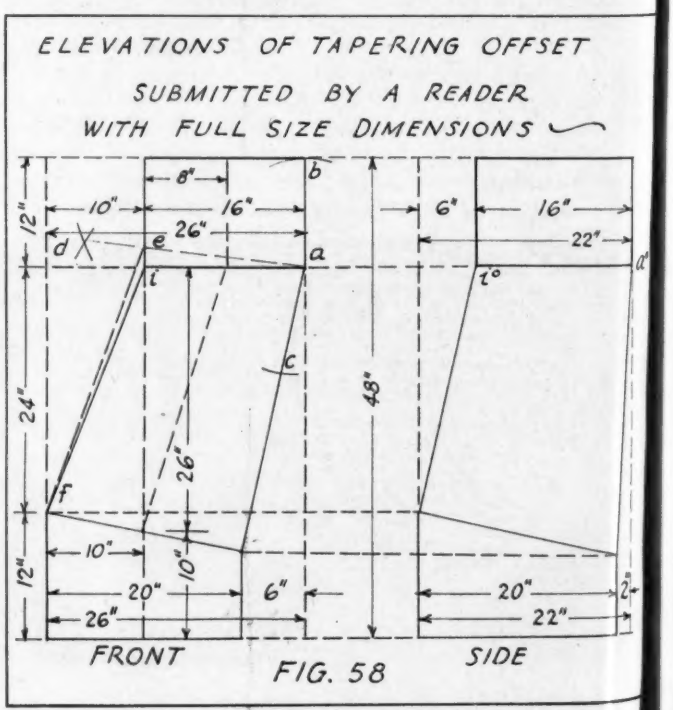


FIG. 58

*All rights reserved.

PATTERNS FOR TAPERING TRANSITIONAL DOUBLE OFFSET HAVING UNEQUAL TAPER ON ALL FOUR SIDES—

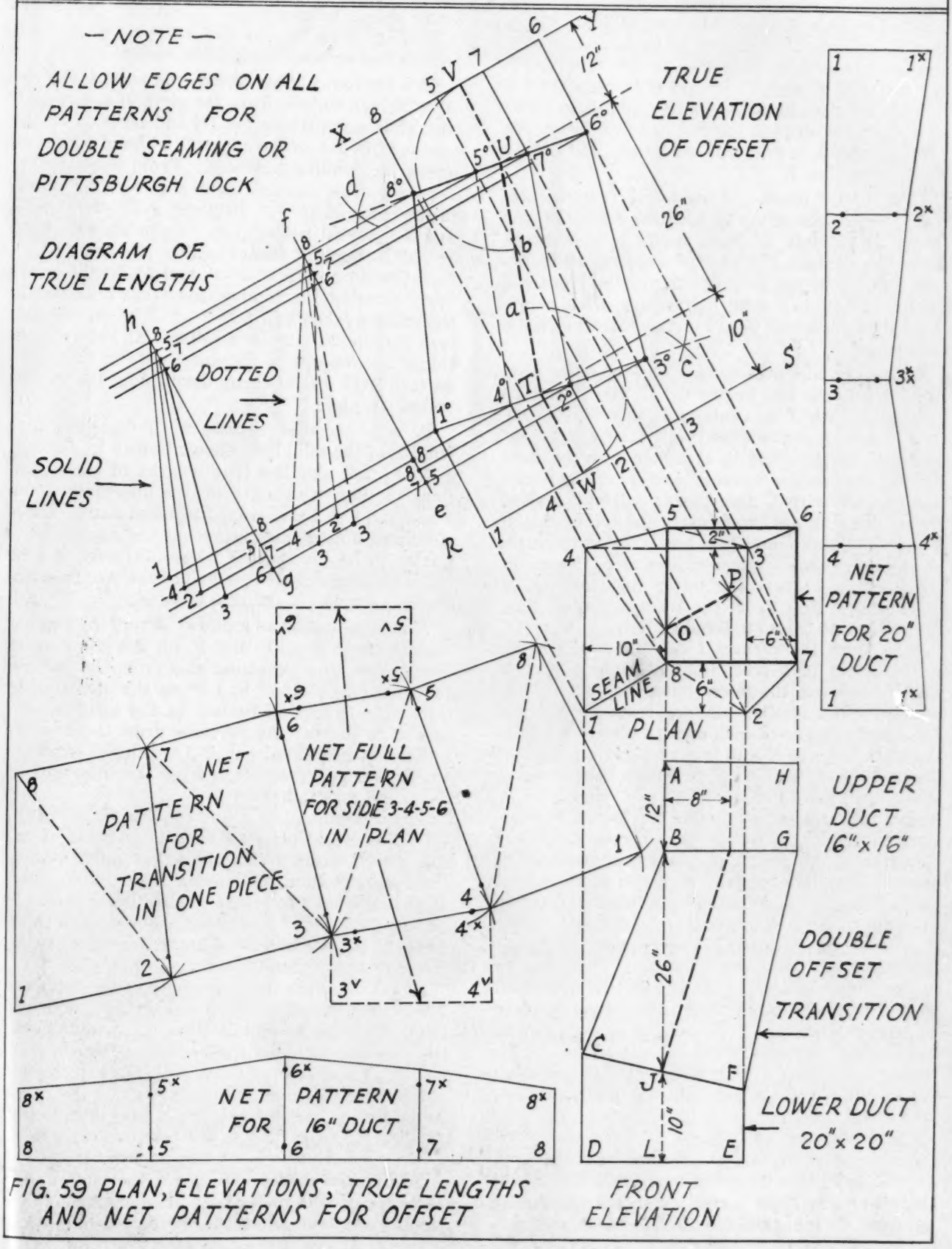


FIG. 59 PLAN, ELEVATIONS, TRUE LENGTHS AND NET PATTERNS FOR OFFSET

Draw the *heavy dotted line* from *O* to *P*, which represents the center line of the offset when viewed in plan with the unequal taper projections on all four sides as the dimensions indicate. Now parallel to the center line *O-P* in plan draw any line as *R-S*. At right angles to *R-S* lay off the *vertical heights* of the *center line* in front elevation as 10 inch, 26 inch and 12 inch as shown by similar 10, 26 and 12 inches in the true elevation between *S* and *Y*. From *O* in plan erect a line drawn at right angles to *O-P* or *R-S* to intersect the line drawn parallel to *R-S* from the 10-inch height in the true elevation, and obtain the intersection *T*.

In a similar manner draw a line from the 26-inch height parallel to *R-S* to intersect the line drawn *P* in plan, at right angles to *R-S*, at *U*. Make the distance *U-V* in *true* elevation 12 inches and *T-W* 10 inches as called for in the front elevation. Then *V-U-T-W* in true elevation represents the *true center line* of double tapering transition offset.

It now becomes necessary to find the miter lines by bisecting the two angles *V-U-T* and *U-T-W* as follows: With *T* as center and any desired radius, draw an arc intersecting the center line at *a* and *W*. With *a* and *W* as center with the same or any other radius intersect arcs at *c*. In a similar manner with *U* as a center and any desired radius draw an arc intersecting the center line at *b* and *V*. Using *b* and *V* as centers with the same or any other radius intersect arcs at *d*. From the intersection *d* draw the miter line through *U* indefinitely. Now from the intersection *C* draw the miter line through *T* indefinitely.

Now from the corners *1-2-3* and *4* of the 20-inch duct in plan erect lines at right angles to *R-S* to intersect the lower miter line at *1°-2°-3°* and *4°*. In a similar manner from the corners *5-6-7* and *8* in the 16-inch duct in plan, erect lines at right angles to *R-S* to intersect the upper miter line at *5°-6°-7°* and *8°*. Draw lines in true elevation from *1°* to *8°*, *2°* to *7°*, *3°* to *6°* and *4°* to *5°* which correspond to similar numbered connections in plan. *1°-8°-6°-3°* then becomes the true elevation of the middle or transition piece of the offset. Complete the true elevation of the upper collar *8°-8-6-6°* and the lower collar *1°-1-3-3°* by drawing lines at right angles to *R-S* from similar numbered intersections on the upper and lower miter lines, all as shown.

The upper and lower collars will be developed by parallel lines and the middle or transition piece by triangulation. In developing the pattern shapes we assume that the seam is desired along the corner *1-8* in plan. Before the transition pattern can be laid out, the collars must be developed first, which will give the true lengths of the miter cuts and are obtained as follows:

Take the girth of the 16-inch duct in plan *8-7-6-5* and place it on the horizontal line *8-8* at the lower left hand corner as shown by similar numbers. From these points *8-7-6-5-8* erect perpendicular lines indefinitely.

Now measuring in each instance from the line *X-Y* in true elevation take the various distances to *8°-7°-6°* and *5°* on the miter line and set them off on the lower pattern on similar numbered lines, always measuring from the line *8-8*, thus obtaining the intersections $8^{\times}$-$7^{\times}$-$6^{\times}$-$5^{\times}$-$8^{\times}$. Connect these intersections by lines, then will *8-*$8^{\times}$*-6*$^{\times}$*-*$8^{\times}$*-8* be the net pattern for the 16 x 16-inch collar or duct.

In a similar manner obtain the pattern for the 20 x 20-inch collar. Take the girth of the 20-inch duct shown in plan by *1-2-3-4* and set it off on the vertical line *1-1* in the upper right hand corner as shown by similar numbers. From these points *1-2-3-4-1* draw lines at right angles to *1-1* indefinitely and make the distances *1-*$1^{\times}$, *2-2*$^{\times}$, *3-*$3^{\times}$ and *4-*$4^{\times}$ equal respectively to similar numbered heights measured from the line *R-S* in the true elevation to points *1°-2°-3°* and *4°* on the miter line. Connect the intersections thus obtained in the pattern; then will *1-*$1^{\times}$*-3*$^{\times}$*-*$1^{\times}$*-1* be the net pattern for the 20 x 20-inch collar. As before mentioned the lengths of the *miter cuts* in the collar pattern will be used in developing the center transition piece.

It now becomes necessary to find the true lengths of the solid lines shown in plan by *1-8*, *2-7*, *3-6* and *4-5*, also the true lengths of the dotted lines in plan which are drawn diagonally from *8* to *2* and *8* to *4* also from *3* to *5* and *3* to *7*. These solid and dotted lines represent the bases of triangles to be constructed whose altitudes will be equal to the differences in heights between similar numbers shown in the true elevation.

The procedure is as follows: From the various intersections *1°-2°-3°* and *4°* on the lower miter line in the true elevation, also from the various intersections *5°-6°-7°* and *8°* on the upper miter line, draw lines indefinitely to the left, parallel to *R-S* as shown. At pleasure, draw the lines *e-f* and *g-h* at right angles to *R-S* which will intersect the lines drawn from *8°* to *6°* on the miter line, at *8-5-7* and *6* as indicated.

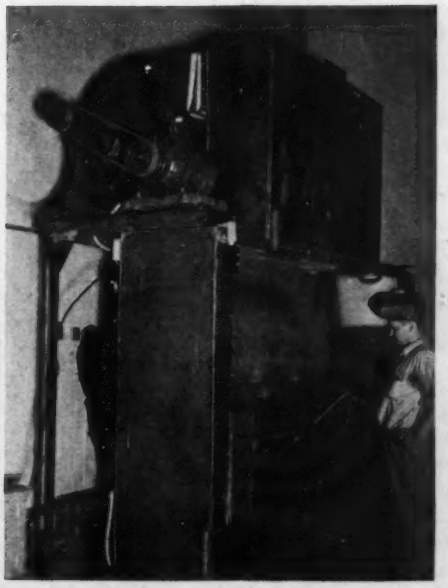
Now for example: to find the true length of the solid line *1-8* in plan, set off this distance on the line drawn from *1°* on the lower miter line in the true elevation, measuring from the line *h-g* as shown from *8* to *1*. As the line drawn from *8°* on the upper miter line in the true elevation intersects the line *h-g* at *8*, then draw a line from *8* to *1*, the true length of the solid line *8-1* in plan.

Again to obtain the true length of the solid line *3-6* in plan, set off this distance on the line drawn from *3°* on the lower miter line in the true elevation, measuring from the line *h-g* as shown from *6* to *3*. From *3* draw a line to *6*, the intersection obtained by the line drawn from *6°* on the upper miter line in the true elevation and intersecting the line *h-g* at *6*. *3-6* in the solid true lengths is the true length of the solid line *3-6* in plan.

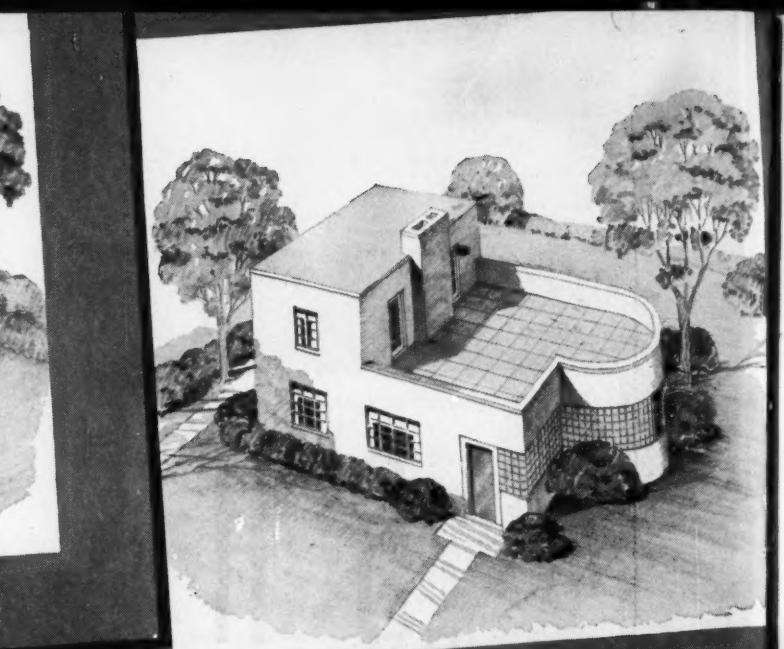
So that the reader will have a thorough understanding of this method, another example of obtaining the true length of the dotted line *3-5* in

(*Continued on page* 84)

SHEET METAL SECTION



DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING



Marching back to .. *What?*

DURING the first six months of peace, a U. S. Chamber of Commerce survey indicates, 1,015,000 families intend to build or buy new homes—592,000 intend to modernize kitchens — 496,000 plan new bathrooms.

But what kind of homes? How importantly will advanced design, improved construction and new materials influence their planning?

Architects and builders already have the answers to many such questions in the versatile performance of steel, not only in industrial buildings but also in dwellings. They know the fine record in industrial plant construction and maintenance made by U·S·S Steel Sheets.

For you sheet metal specialists that means tremendously increased demand for ductwork, roofing, siding, partitions, all the familiar applications. In new or altered dwellings everywhere, there is need for the sort of strength, durability, resistance to weather and fire, provided in such full measure by U·S·S Steel Sheets.

We match your close attention to advanced shop practice, improved design, all the things that contribute to your skill in manipulating sheet steel. We offer our years of study and effort, our developments of steels with unique characteristics, each best suited to meet a certain set of conditions, to insure for the artisan all the advantages you get with U·S·S Steel Sheets.

As you meet the demand for new applications of steel, you may find yourself up against new problems, where an intimate knowledge of the various types of steel sheets would be invaluable. We shall be glad to help you with constructive suggestions, detailed practical data, such as we have assembled in the "U·S·S Sheet Metal Worker's Guide". Drop us a line today and we shall be glad to forward your copy. You incur no obligation, it's free.

U·S·S Steels for successful sheet metal workmanship

U·S·S GALVANIZED STEEL for sheet metal structures requiring the added protection of a zinc coating.

U·S·S COPPER STEEL to give twice the atmospheric corrosion resistance of regular steel at little individual cost.

U·S·S PAINTBOND — A galvanized. Bonderized sheet that permits immediate painting and holds paint tighter. U·S·S Dul-Kote, a product with similar qualities, available in the South and West.

U·S·S HOT-ROLLED AND COLD-ROLLED STEEL to provide the basic advantages of steel, plus maximum economy, in accordance with the needs of each individual job.

U·S·S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U·S·S VITRENAMEL—Sheets designed especially for porcelain enameling.

U·S·S LOW ALLOY, HIGH TENSILE STEELS to resist corrosion and increase strength-weight ratio.

U·S·S STEEL SHEETS

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
COLUMBIA STEEL COMPANY, *San Francisco*
TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham*
United States Steel Supply Company, Chicago, *Warehouse Distributors*
United States Steel Export Company, New York

USS

UNITED STATES STEEL

Working with paper segments, J. C. Smith, a G-E planner, arranges a layout for parts to be cut from metal plates. See Fig. 4, following.

"Paper Doll" Pattern Technique Saves Metal in Cutting

By J. F. Cunningham
Asst. to President, Apparatus Mfg., General Electric Company

A TECHNIQUE of "cutting out paper dolls" and making "jig-saw puzzles" of them is helping to solve one of war industry's toughest problems—the scarcity of vital materials.

Thousands of tons of metal urgently needed in the war effort today are made available by American industry's refinement of such techniques over a period of years. Almost daily, trained planning experts and men on the production line together develop methods of getting still greater number of parts out of metal sheets and plates.

At General Electric plants alone thousands of parts cut from flat sections of scarce metals go into small motors, huge turbines and other complex electric apparatus contributing to the motive and firing power of weapons of war. Many of these parts are made from flat stock sheets. Some are simple circles, some are triangular, and others have unusual shapes resembling stars, banjos or top hats. A few are as complex as the microscopic pattern of a snowflake. But when laid out for cutting from stock sheets, all must be nested so closely together that only a narrow strip of metal will remain as scrap.

Economical Cutting Procedure

After the designs for a new product have been engineered, blueprints specifying the shape, size and thickness of parts are furnished the planning department. One of the many responsibilities of this department is the development of methods obtaining the greatest number of parts from the smallest amount of materials. The best possible nesting arrangements for such simple shapes as squares, triangles and circles can be expressed in simple formulas so that, given the measurement of a part, a planning man can check readily the ideal length and width of material from which they are to be cut.

Often, however, complicated parts differing widely in shape and size must be nested together

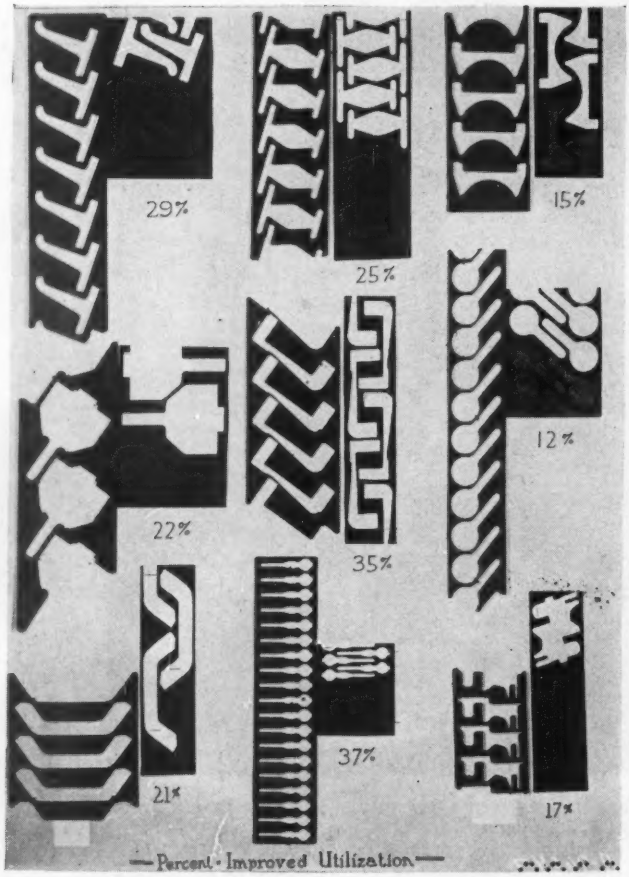


Fig. 1—Nine examples of improved utilization of materials. Strips at left show old methods; at right, the new. Figures show per cent of metal saved. Black indicates scrap.

and here the planning department used the "cut and try" method. Parts are drawn to scale on ordinary paper, then cut out with a pair of scissors, a practice to which planning men sometimes jokingly refer as "cutting out paper dolls."

The pieces of paper are then shifted around until they nest snugly within the proportionate size of a stock sheet of metal, much as the pieces of a completed jigsaw puzzle mesh together. Often parts for more than one product are placed in the same layout in order to obtain closer nesting. When the planners discover that slight changes in the length, width or thickness of a part will enable more parts to be cut from the same layout, they consult with engineers who designed the part to see if the change is possible.

The layout is then sent to the factory for guidance in actual cutting. There are several mass production methods of cutting metals, depending on the thickness of the stock. Power-driven shears and saws are sometimes used, as well as punch presses provided with pressure up to 600 tons, from which parts are stamped from metal sheets a quarter of an inch thick or less. For heavier material, up to 11 inches thick and generally referred to as plate, gas torches are used as flame-cutting.

Welding Small Segments Saves Metal

The best possible nesting arrangements are particularly important at present for metal plates which, because of war demands, mills are not always able to supply promptly in certain stock sizes. As an example of how manufacturers can plan to conserve materials by revising their nesting layouts to whatever sizes are available, last year production of an important war item was threatened by slow deliveries of heavy metal plates to General Electric. From these plates were cut a large circle-shaped part, divided into four 90-degree segments (Fig. 2). The segments can be cut from a much smaller plate than the full circle would require and later welded together.

The problem of adapting this particular layout to plates of a size already available was solved by Spencer Frederick, a war worker whose job is to make the full sized layouts. Some of these nestings are prepared by the planning department, and others, where stock plate is used, are made by Mr. Frederick. The pattern is then followed by flame-cutting machines. He suggested dividing the circle-shaped part into six rather than four segments, because 60-degree segments, having more shallow arcs than those of 90 degrees, can be nested more closely together, side by side. The suggestion saved 537,000 pounds of steel last year. For this suggestion and a similar one Mr. Frederick has received from the company awards totaling $1025. He is just one of the men on the

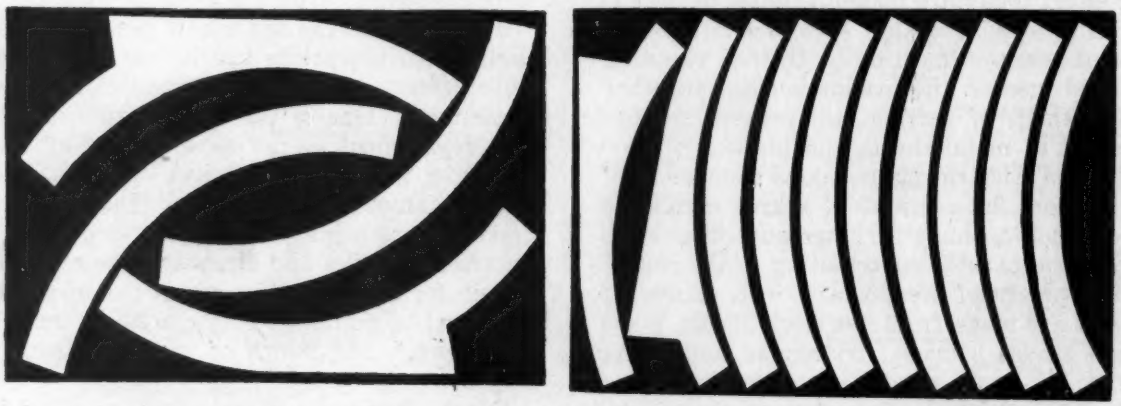


Fig. 2—Spencer Fredrick, G-E worker, saved 537,000 pounds of steel in 1942 by arranging for the ring shape shown to be cut in six 60-degree segments instead of the former four 90-degree segments.

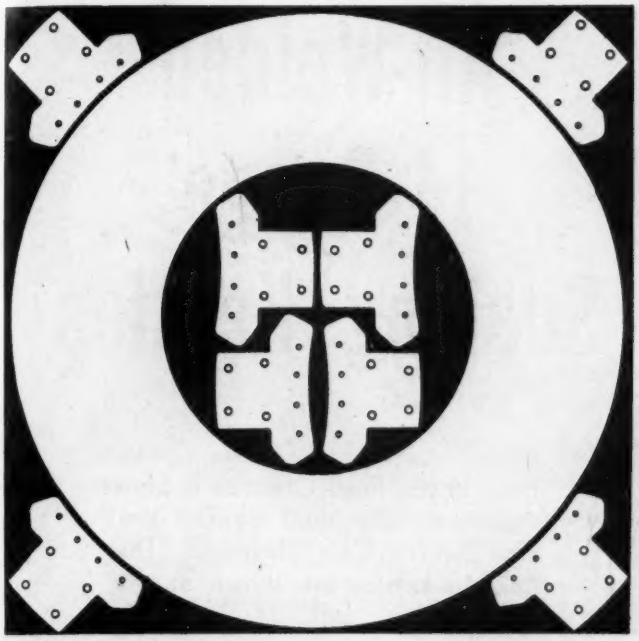


Fig. 3—Arrangements for obtaining one large full circle piece plus eight small parts.

Fig. 4—How two rings can be cut from one square sheet. The second ring is cut as six segments, later welded.

production line contributing to the solution of material conservation problems by volunteering layout suggestions.

Second Pass Through Punch Saves

An example of a sheet layout improvement is a small T-shaped part stamped out on a punch press (Fig. 1). Formerly a strip of metal slightly wider than the "T" was fed through such a press, leaving as scrap a strip which looks like a long row of "T's" on a typewritten page. Working with the tool designer, a planner discovered that by using a slightly wider strip of material, double the amount of pieces could be obtained if the strip were reversed and fed through the press a second time. Because the "T's" were required in considerable quantity, however, the planning department specified a double die, or one which could stamp out two "T's" at the same time, each one on an opposite side of the strip. As a result, the same number of "T's" could then be stamped out by feeding the strip through the press once as had previously been obtained by feeding it through twice.

In obtaining circular parts which must be of a solid piece, virtually all of the space remaining in the squares from which they are cut is used. For example, one stamping job called for a number of ring shapes and another for a quantity of pieces shaped like a top hat and twice as thick as the ring shape. At the suggestion of planners, designs were changed so that the thicknesses were the same, enabling both parts to be cut from the same square sheets. Now, in addition to the ring shape, eight top hat pieces are also obtained from a single sheet—one from each of the four corners and four more from the center (Fig. 3).

The most obvious method of stamping out circular parts such as washers on a punch press is in a single line, from a long, narrow sheet. Several years ago, however, an arrangement was worked out for nesting rows of circles, one below the other, on a wider strip. With the circles beginning each row arranged in a line at an angle of 60 degrees with edge of the stock, a simple mathematical formula was developed for deciding on the width of stock required for stamping out circles of any size.

The planning of nesting layouts comes under the heading of "materials utilization," an industrial term for any method of obtaining the greatest number of parts from a given amount of materials.

Wanted—Cyclone to Separate Dust from Shavings

An AA reader recently requested data or sketches showing the construction of a collector and separator which "shows the apparatus required inside a sheet metal dust separator which is to separate saw dust from shavings. In other words, the mixed materials enters the separator at the top and leaves the separator—one pipe leading into a saw dust bin and another pipe leading into the shavings bin."

The editors have looked through all handbooks and data on separator design, but cannot find any separator which, within itself, will separate dust from shavings. Perhaps there has been such a unit built—if so will the builder send us a sketch and explain the operation.

All-Welded 14-Gauge Soaking Kettles

The photographs of these operations in the Fred Christen & Sons shop were furnished by The Lincoln Electric Co., Cleveland. The finished kettles are shown at the left.

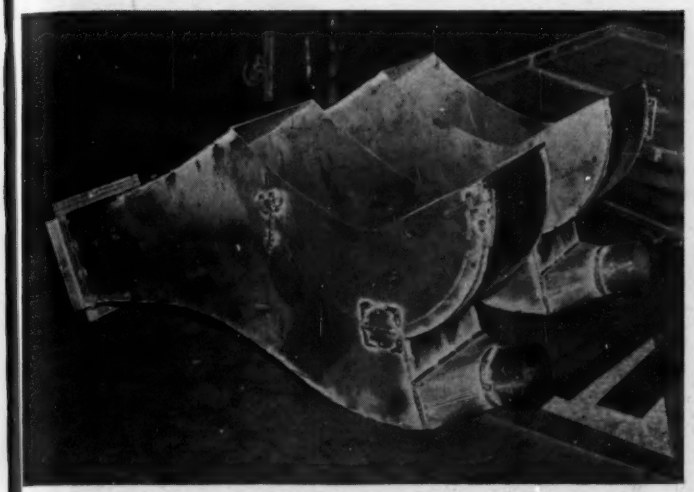
FOR many years Fred Christen & Sons, Toledo, Ohio, has been one of the largest volume architectural sheet metal and roofing contractors in the middle west. As many as sixteen roofing trucks have been operated by the company, while architectural sheet metal work, ventilation work, and industrial sheet metal new work and maintenance have kept the big shop busy.

Today, as in many of the large, power-equipped shops, war work is using more and more of the shop's men and facilities. Dozens of sub-contract war items are in steady production. New machines have been installed to do standard operations quicker and cheaper. Even some of the firm's early machines—standing practically idle in peace times—have been restored and modernized and put into daily operation.

Shown in the photographs is a soaking kettle in which materials are dyed—hundreds of these have been made and there is an order going through the Christen shop practically every week. Made of 14-gauge black iron; measuring 26 inches in diameter and 24 inches deep; stiffened with an angle iron ring on the bottom and a top

The rolled bottom angle and top bar rings have been welded and the body inserted and tacked to the rims. Continuous beads will be laid later. The bottom (two "short ends") is being welded prior to insertion.

Arc welding the galvanized hinge and handle to the side of the kettle. Helper is holding handle in position with wood hammer handle.



"Jacks" or hoods for buffing wheels and hoods for many sizes and types of grinding wheels and power tools are almost continually in production in the Christen shop. These are 14-gauge black iron and, of course, all welded.

The tomato loading station tank (300 feet long) mentioned in the text was also arc welded. Here is one 75-foot section being tack welded on a temporary jig.

ring bar—rapid production is attained by welding in place of seaming.

The body is rolled for a butt joint and a tight fit into the previously fabricated top and bottom rings. The rings are rolled and butt welded; then the body is placed in the rings and tacked. Then the vertical seam of the body is welded and the tacks on the rings are made a continuous weld by depositing welding material as shown in Photograph 3 along the edge of the angle leg and edge of the top ring.

Two handles are welded to the body and all welds are ground down. Finish grinding is not necessary, so grinding stops with all excess metal removed and all rough spots taken down.

As in most shops, welding is playing a more and more important part in the operations at Christen's. On industrial work, particularly, everything possible is welded. For instance, two of the photographs show a tomato loading station tank 300 feet long, 14 gauge black iron, fabricated in 75-foot sections and shipped to the job. Also two typical grinding wheel hoods, of a type of which Christen makes hundreds every year.

Whereas in years gone by Christen used to seam, solder, bolt, metal screw, rivet such work—today everything is welded. Work goes much faster, less skilled labor can be used, considerable intricate pattern work is eliminated, one good layout man can keep a whole shop busy welding. And, last, many items which could not previously be made by a sheet metal shop but hard to be made by a press and die setup can now be made with semi-skilled labor plus welding.

Konzo—Check Furnace Size

(*Continued from page* 37)

has a return duct of 452 sq. in., whereas two 18 inch ducts in problem 9 have a total return area of 508 sq. in. The former was adequate and the latter were much undersized. Hence, the use of square inches of return duct area as the sole index of return capacity is frequently most misleading. Use Table 3.

Problem No. 10

Summarize the steps to be followed in checking the furnace size and the return duct size in a gravity heated house.

(a) Determine the heat loss from the entire house, using the factors given in the new Gravity Manual.

(b) Check the furnace size, using Tables 1 or 2.

(c) Check the return duct sizes using Table 3 and Fig. 1. If the returns are inadequate, supply more return duct capacity, making use of Table 3.

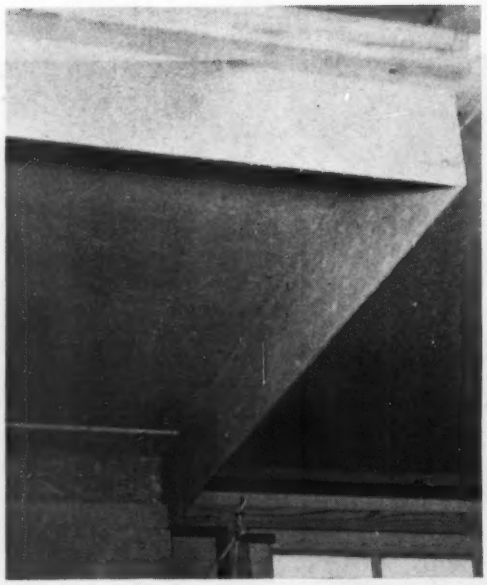
(d) Check the entire duct system for size requirements from Table 4.

(e) Discard the obsolete "square inch of leader pipe" index, and use the newer B.t.u. ratings given in the Gravity Manual, and as explained in this article.

Small Firms' War Production

A REPRESENTATIVE sample survey of the Nation's small manufacturing concerns by the Office of War Information indicates that 58 per cent are engaged directly or indirectly in war production. Of the remaining 42 per cent, about one-quarter have been unable to get war production contracts and about three-quarters have not tried to get war contracts because their products were not required for war, because they had enough civilian business or for other reasons.

Only concerns employing no more than 125 wage earners were included in the survey; actually, less than 5 per cent of the firms studied employed more than 80 workers.



These views, looking upward into the range hood show (left) the outer rim of cement-asbestos strip and (right) the rounded cove, square opening to the ventilating fan and two stove pipe holes. The drawing below shows back wall and ceiling construction, also fan box and damper.

Range Hoods—Stove Jacks—Heat Stops

IN Camp Ellis, in Illinois, Iowa Sheet Metal Contractors, of Des Moines, Iowa, built on the site and installed 160 mess hall range hoods as shown in the sketch; they installed as a part of these hoods 160 exhaust fans (see sketch); and in the barracks set 5,000 heating stoves with a simple one-piece cement asbestos heat stop nailed to the wall behind each stove and 5,000 stove roof jacks.

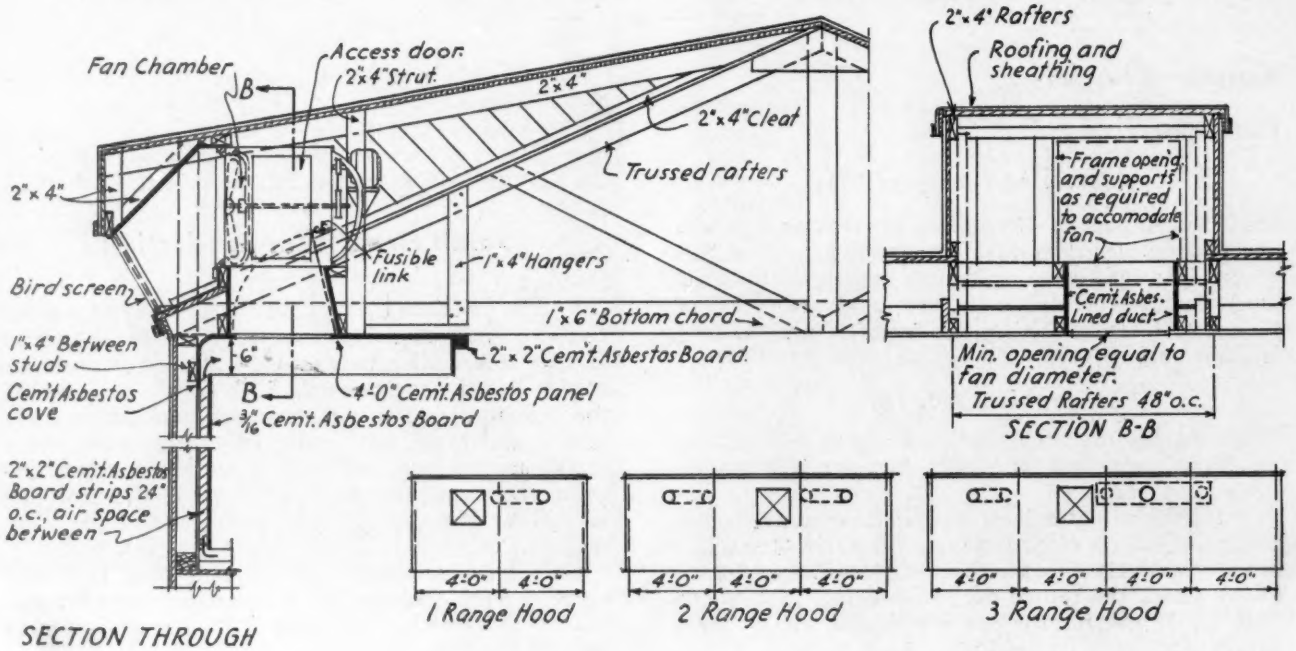
The range hoods are of three sizes and types (as shown in one of the details) to accommodate one, two or three cooking ranges. The one-stove hoods have a single boxed outlet of cement-asbestos board to the outside fan chamber, equipped with a fire damper as shown. The two-stove and three-stove hoods also have one opening, of the same construction, but these have two smoke pipe holes and two roof jacks in place of the one hole and one jack of the single range hood.

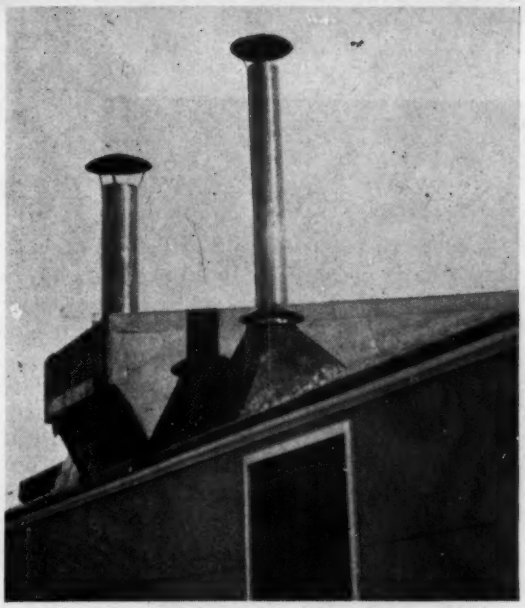
For the one-range hood and the two-range hood, each range has its smoke outlet through its own jack, but in the three-range hood, two of the ranges are breeched into one jack as shown in the photograph.

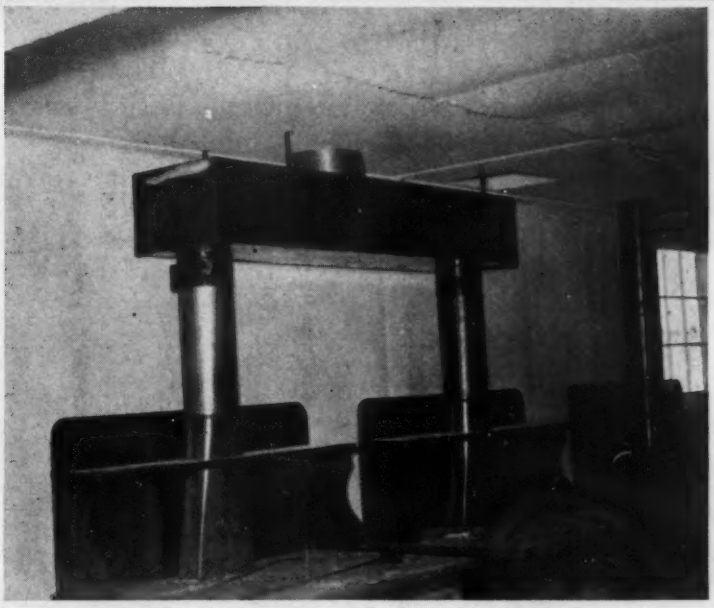
The breechings and the roof jacks were also fabricated by Iowa Sheet Metal Contractors, but were made in the main shop in Des Moines and delivered to Camp Ellis painted and ready to erect.

Hood Construction

Briefly, these cement-asbestos hoods employ a unique construction consisting of 4-foot wide cement-asbestos sheets nailed to 2 by 2-inch cement-asbestos nailing strips which were purchased to size, but in







Left—Outside view of smoke pipes and jacks for a two-range hood and the exhaust fan outlet. Right—Three range hood with two ranges connected into a common breeching. All metal work by Iowa Sheet Metal Contractors.

long lengths. The cement-asbestos sheets which form the back of the hood begin two inches above the floor to permit room air to enter the space behind the sheets and to rise, as heated, into the top of the range hood. The section through the wall in the hood sketch shows this air passage.

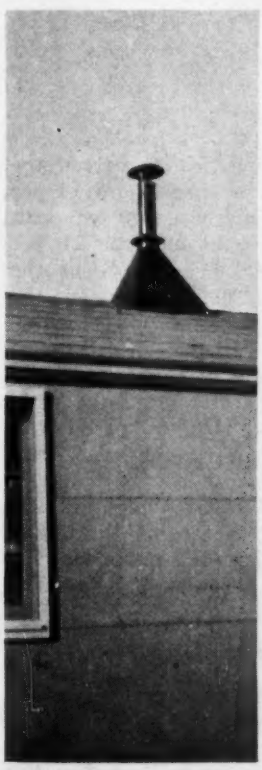
To make the back wall, the 2 by 2 cement-asbestos strips were nailed to three 2 by 4 wood studs of the wall. The 2 by 2 cement-asbestos strips were placed 24 inches on centers so that there would be one upright nailing strip at the center of the 4-foot cement-asbestos sheet and another 2 by 2 at the junction of the sheets. At the center point the sheets were nailed to the 2 by 2, but at the sheet edges an edge covering strip 4 inches wide was laid over the joint and strip and sheet were nailed together into the 2 by 2.

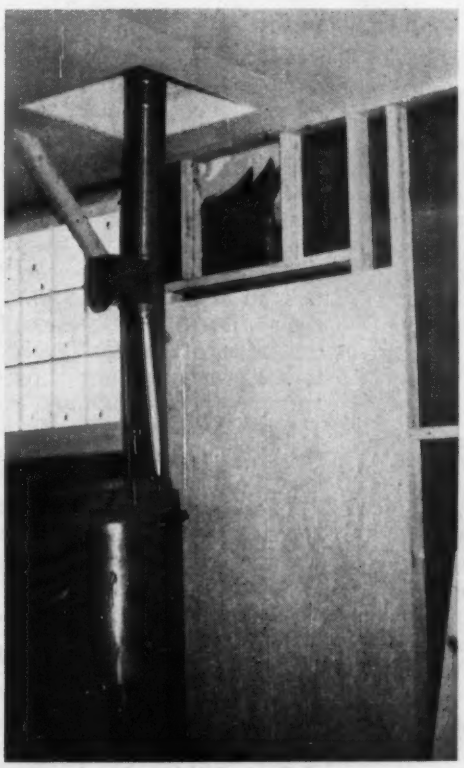
The top of the hood was constructed similarly (see photographs and sketch) and then the outside three edges of the hood were finished off by nailing a 2 by 2 cement-asbestos strip around the edge and nailing a 6-inch wide moulding inside the 2 by 2.

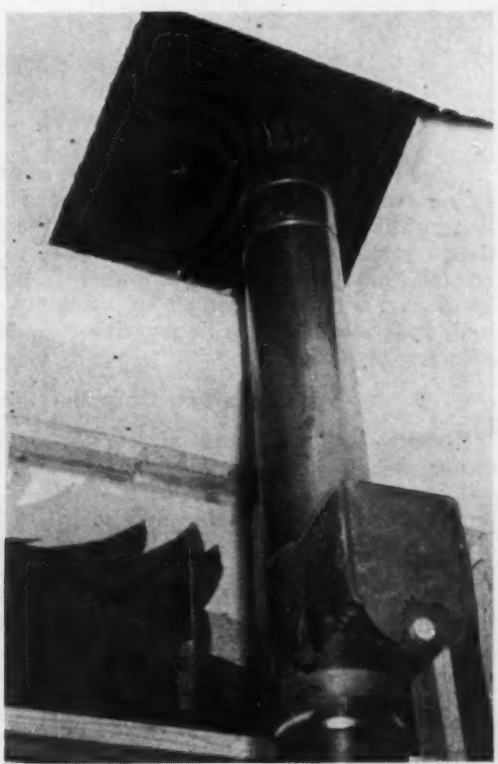
Between the top and the back of the hood a curved cove strip was nailed to a special wood nailing strip along the back and to another wood nailing strip across the ceiling. This curved cove strip was also purchased in lengths and cut to size on the job.

This brief description of the hoods and the sketch indicate that a lot of cutting was required to cut

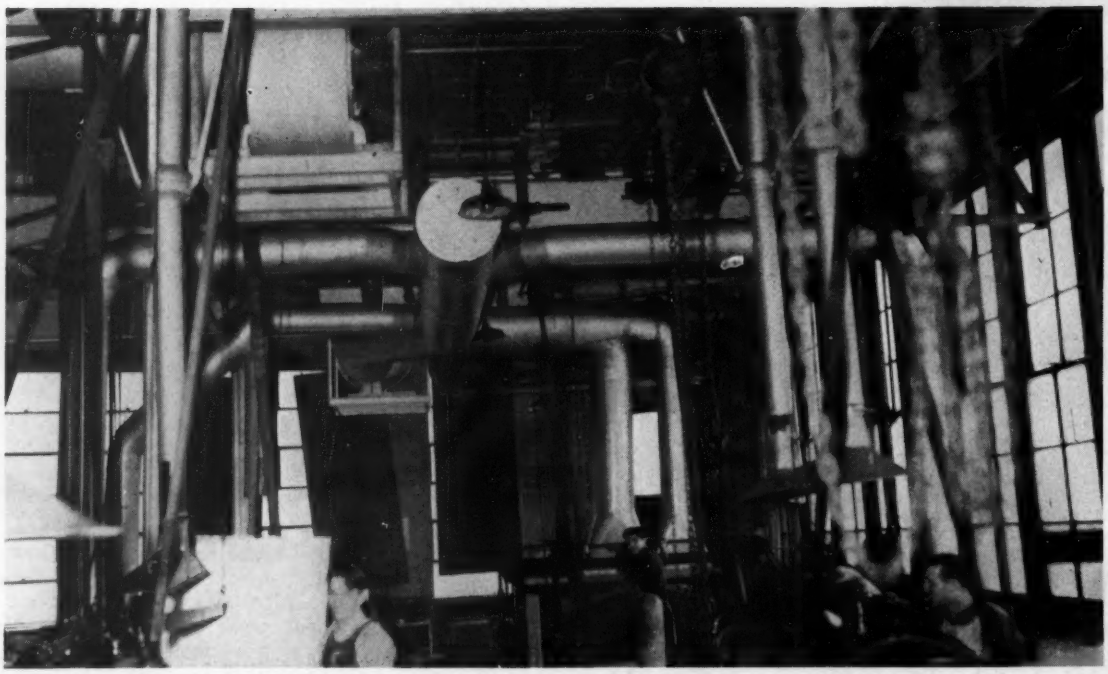
(*Continued on page* 72)







Barracks heating stoves pass through the roof through the smoke pipe jack shown left and right. Note how pipe is ventilated through the jack by spreading pipe and jack over flanges. In center, a cement-asbestos heat stop is nailed to the wall behind the stove.



Maintaining collecting efficiency when more branches are added is more than a matter of increasing fan speed. The entire old system may have to be re-engineered. Present-day practice (like this installation) provides for more machines by using an oversized fan and motor originally.

Check the Fan and Motor Before Adding More Branches to an Old Collecting System

By B. F. Mansion
Engineer, Bayley Blower Company

WHEN an industrial customer asks the blow piping contractor to add more machines to an existing system and use the old fan and motor the contractor should remember that, generally speaking, it is impossible to add machines to a system calculated originally for a certain number of machines and with equipment selected accordingly without impairing the efficiency of the system.

Speed Up Fan Only If—

Speeding up the fan is the first thought of the owner and, in some instances, of the contractor as well, but little thought is given to the main trunk line which is not sized for additional machines and other equipment such as the motor and collector. If the fan was large enough to produce additional air when speeded up the velocity of air through the present trunk line would be increased considerably thereby increasing the resistance of the system and automatically increasing the resultant horsepower of the fan.

To illustrate, we might use the "Law of Fan Performance." Speeding up the fan on the same system without any additional machines would increase the cubic feet of air per minute in direct proportion; the system resistance as the square; and the horsepower as the cube of the speed ratio. In percentage this would mean if the fan were speeded up 10 per cent, the air delivery would be increased 10 per cent, the resistance of the system would increase 21 per cent and the horse power 33⅓ per cent. Since the amount of air has been increased only 10 per cent the owner immediately becomes penalized in power, which cost is constant and should be of more vital interest to the owner than speeding of the fan. As a general rule motors driving fans are selected for only 10 to 15 per cent beyond the actual brake horsepower, thereby indicating that the motor would be overloaded.

There are no fans designed today which can be speeded up appreciably without increasing the power and if the motor was not oversized at the time of the installation, the fan will not be large enough to carry the additional work.

Branches Are Bottlenecks

It is true machines have been added on existing systems and apparently to the owner the system is satisfactory, but when the air passes through additional openings the velocity is decreased and thus the carrying capacity becomes inefficient with the result clog-ups will take place in the branches. Eventually

the operator of the machine becomes dissatisfied, issues a complaint and will not be satisfied until the machine is again operating as he is accustomed to having it. It is possible some branch connections have been overly sized for some machines and could be decreased and yet do the actual work satisfactory.

It is to be regretted that collecting systems in the past have been designed to take care of a certain amount of work with no thought for the future. Present day users have profited by past experiences and are today installing complete systems with equipment sized to take care of as much as 50 per cent increase so that if any machines are to be added in the future, it can be done.

It is to be understood in the system which we have discussed that all branches are wide open. In some states this is a requirement and since certain suction readings by Monometer in inches of water is also required, the possibilities of adding machines are remote.

Larger Branches Lower Friction

While there are no generalities acceptable to the conclusions in how many inches in diameter customary branch pipes could be increased to lower the resistance of the system, the idea of increasing the size of the branch pipes, however, is worthy of commendation, since two of the functions of resistance or friction of piping is "velocity of air" and "pipe size." Increasing the branch pipe will decrease the velocity of air and automatically decrease the resistance. But to make a definite statement as to how much any branch pipe can be increased in inches might be misleading. (See Friction Chart below.)

Generally, experience shows that existing systems were figured at peak loads. This is natural since all jobs of this kind are competitive.

Revamping a system implies more thought and energy than generally considered. When drawings of the system are not available the contractor should measure the entire system, make his own drawing, include the additional machines and calculate for the trunk sizes. His next step should be to measure the total amount of air being exhausted out of the present system. Branch connections should be measured for velocity as this would immediately determine whether or not they could be increased or decreased. Since refuse material, regardless of kind, has a velocity of air for conveying known as "critical" this could be approached without endangering the system and the excess of air, if any, utilized for additional machines. The speed of the fan and the amperage of the motor should be taken. Increasing the speed of the fan up to the point where the motor will reach its maximum overload will also produce additional air. This amount added to what has been gained by lowering the velocity in the branches should be sufficient to take care of some additional machines. The exact number, however, would be determined by the steps stated above.

To summarize, a glass contains a certain amount of water and when filled beyond its capacity overflows, but in air handling, each additional connection detracts from the system's efficiency with the system becoming worse until eventually after the owner spends a considerable amount of money he finds it necessary to replace the present equipment with a larger size, thereby doubling the incurred expense if not more.

The writer's advice would be to remove the fan equipment entirely replacing same with adequate size and also increase the main trunk line where machines are added on, as well as the discharge duct or at least increase the main trunk line to conform to the additional branch pipes and then speed up the fan providing the fan has the additional capacity.

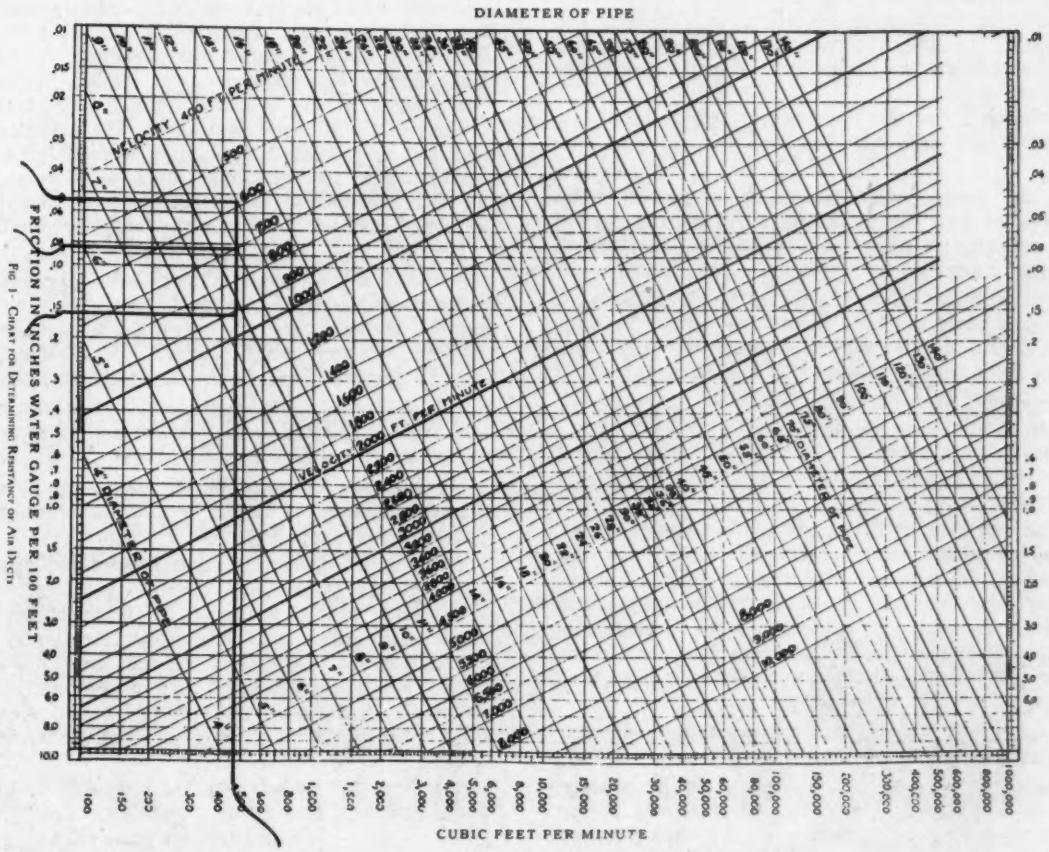

DIAMETER OF PIPE
FRICTION IN INCHES WATER GAUGE PER 100 FEET
CUBIC FEET PER MINUTE
VELOCITY 400 FT PER MINUTE
VELOCITY 2000 FT PER MINUTE

Fig 1 - Chart for Determining Resistance of Air Ducts

The New Tin and Solder Order

THE War Production Board, November 3, issued General Preference Order M-43, as Amended, relaxing restrictions on the tin content of solders where it has been found that higher tin content is necessary. Previously this higher content could be used only upon the granting of appeal. But under the amended order specific provisions permit higher tin content, in some cases above 21 per cent, for certain solders. Careful survey has shown that the higher tin content solders permitted will actually result in a saving of tin.

The amended order also permits the reworking of block tin pipe.

PART 1001—TIN
[General Preference Order M-43, as Amended Nov. 3, 1943]

The fulfillment of requirements for the defense of the United States has created a shortage in the supply of tin for defense, for private account and for export; and the following order is deemed necessary and appropriate in the public interest and to promote the national defense:

§ 1001.1 *General Preference Order M-43*—(a) *Applicability of regulations.* This order and all transactions affected thereby are subject to all applicable regulations of the War Production Board, as amended from time to time.

(b) *Applicability of order.* The prohibitions and restrictions contained in this order shall apply to the use of material in all items or articles hereafter manufactured irrespective of whether such items or articles are manufactured pursuant to a contract made prior or subsequent to January 9, 1943, or pursuant to a contract supported by an allotment symbol or a preference rating. Insofar as any other order of the War Production Board may have the effect of limiting or curtailing to a greater extent than herein provided the use of tin in the production of any item or article, the limitations of such other order shall be observed.

(c) *Definitions.* For the purposes of this order:

(1) "Tin" means and includes both pig tin and secondary tin.

(2) "Pig tin" means metal containing 98% or more by weight of the element tin, in shapes current in the trade (including anodes, small bars, and ingots) produced from ores, residues or scrap.

(3) "Secondary tin" means any material (except tin plate and terne plate as those terms are defined in Supplementary Order M-21-e) which contains less than 98% but not less than 1.5% by weight of the element tin.

(5) "Inventory" of a person includes the inventory of affiliates and subsidiaries of such person, and the inventory of others where such inventory is under the control of or under common control with, or available for the use of such person.

(6) "Implements of war" means combat end-products, complete for tactical operations (including, but not limited to, aircraft, ammunition, armaments, weapons, ships, tanks, military vehicles and radio and radar equipment), and any parts, assemblies or materials to be incorporated in any of the foregoing items. This term does not include facilities or equipment used to manufacture the foregoing items.

(7) "Base period" means the corresponding calendar quarter of 1940.

(d) *General restrictions on use of tin.* (1) No product or article or part thereof shall be manufactured of pig tin if it is possible to use secondary tin for such purpose.

(2) No tin in any form shall be used in the manufacture of any item or in any process appearing on List A of this order (in general items are not our activity); nor shall tin be used for any purpose except to manufacture the items or for the purposes listed in Schedule 1 of this order, and then, only within the limitations and restrictions specified in Schedule 1 with respect to such item or purpose.

(e) *Restrictions on the use of certain tin products.* Except with the specific permission in writing of the War Production Board granted pursuant to appeal under paragraph (k), no person shall use any of the tin-bearing products on List B (in general items are not our activity) of this order in the manufacture or treating of any other product or article; provided, That when any such tin-bearing product is listed in Schedule 1, it may be used for the purposes for which it is permitted to be manufactured as specified in Schedule 1.

(j) *Limitation on inventories.* No person shall receive delivery of tin, or products thereof, in the form of raw materials, semi-processed materials, finished parts or subassemblies nor shall he put into process any raw material, in quantities which in either case shall result in an inventory of such raw, semi-processed or finished material in excess of a minimum practicable working inventory, taking into consideration the limitations placed upon the production of tin products by this order.

SCHEDULE 1

Pursuant to the foregoing order, tin may be used only in the production of the items and for the purposes set forth in this Schedule, subject to any limitations, restrictions or conditions specified with respect to any such item or purpose, and then, only to the extent that substitution of a less critical material is impracticable:

(1) *Implements of war.* The conditions, restrictions and limitations set forth in this Schedule with respect to any listed item or purpose shall not apply to the manufacture of "implements of war" produced for the Army or Navy of the United States, the United States Maritime Commission, or the War Shipping Administration, where the use of tin in the grade and to the extent employed is required by the latest applicable specifications (including performance, specifications, unless otherwise directed by the War Production Board) of the government service or agency for which the same are being produced.

(3) *Tin plate, terne plate and terne metal.* Tin plate, terne plate and terne metal, as respectively defined in Supplementary Order M-21-e, as from time to time amended, may be manufactured as permitted under the provisions of said Supplementary Order. Terne metal, however, may be manufactured from secondary tin only.

(6) *Solder.* In the manufacture of solder, the tin content shall be limited as follows, according to the purposes for which the solder is to be used:

(i) For the manufacture of open top sanitary cans—not more than 21% tin by weight until January 1, 1944 and then not more than 5% tin by weight.

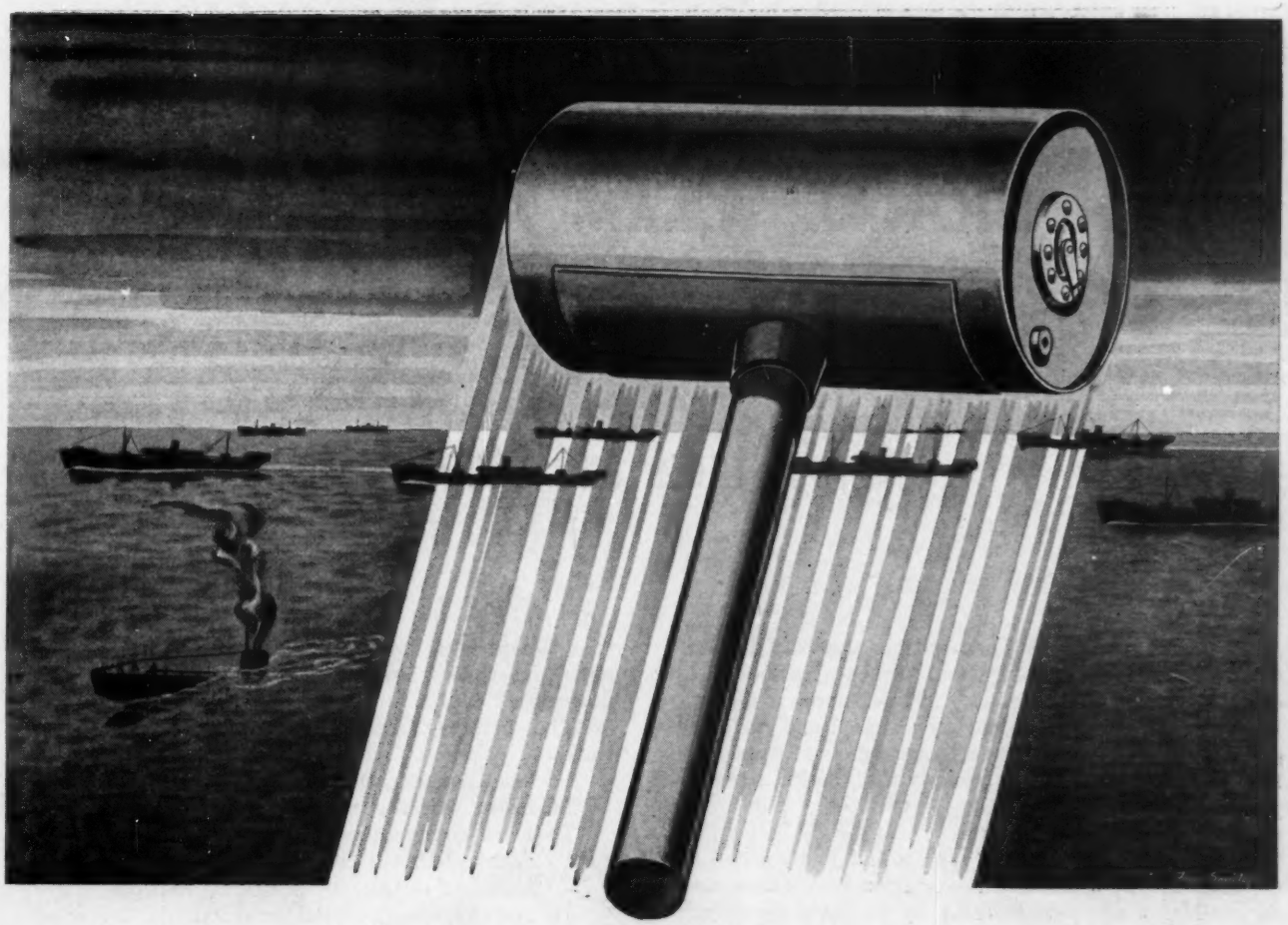
(ii) For the maintenance and repair of electric motors and generators—not more than 40% tin by weight.

(iii) For the manufacture of agricultural equipment made from galvanized sheet (excluding dairy equipment and dairyware)—not more than 40% tin by weight.

(iv) For the fabrication or repair of galvanized sheet metal air, heat and refrigeration ducts, gutters, downspouts, leaders, and roofing—not more than 30% tin by weight.

(v) For the manufacture and repair of the following dairy and egg processing machinery and equipment as

(*Continued on page* 75)



U-boat killers

They're called ash-cans. It's an apt name. There isn't anything spectacular about these sheet-steel drums, but they are packed with TNT, and when they go off near a U-boat they often stave in its plates, bringing its career to a sudden end. There is a tremendous amount of sheet steel being used in preparing these depth charges, and a lot more may be needed before Hitler's U-boats are finally licked. Bethlehem Steel Company is producing substantial tonnages of sheet steel for use in depth charges. We are turning out steel sheets by the thousands of tons for dozens of military uses, such as ammunition cases, windshields for shells, bomb fins, field kitchens, truck and tank parts, air ducts for naval vessels—as well as for essential uses on the home front.

★ **BETHLEHEM STEEL SHEETS** ★ ★

BETHLEHEM STEEL

★ ★

HISTORY OF THE NATIONAL WARM AIR HEATING and AIR CONDITIONING ASSOCIATION

By... ALLEN W. WILLIAMS

CHAPTER 9

NRA Starts and Stops

THE June, 1933, convention was held in Chicago with a large registration, for the National Recovery Act, better known as N. R. A., under which all business was to operate, had been passed and the delegates were anxious to be fully posted as to that new law and thus be able to comply fully with its provisions.

Another attraction was the World's Fair, known as the "Century of Progress," which had just opened in Chicago and at which the Association was sponsoring an exhibition of products made by its members in the unique and colorful "Glass-block House" erected by the Owens-Illinois Glass Company, a member of the Association.

N.R.A. Established

President McGrath's address delivered at the opening session of that convention reflected so well the current conditions and problems that it is written, in part, into this history of the Association:

"Our program will unfold its own story, told in a manner easily understood, and made up of subjects of vital current interest and importance to your business.

"I wish to refer to the revolutionary provision of the National Industrial Recovery Act, now in the process of legislation at Washington. As an association, we must choose either to enter into partnership with the government in promoting stability within our industry or to ignore the opportunity and thereby, by our own inaction, force the government to step in and set up its own regulation, even perhaps to a point of issuing licenses to operate.

"Drastic changes in manufacturing and selling practice are sure to result from this new set-up. If it leads to both volume and price control, as seems likely, we must turn for profits, not to high-pressure selling, but to cost cutting and cooperation within our industry, to increased sale of our products as a whole, thereby raising the sales of each one of us. This might well mean more rapid plant modernization, more cooperative advertising and sales promotion, sharper competition between our and other industries, further stimulation of research directed to the discovery of new products and new applications.

"We must remind ourselves that our place in the scheme of things is to give people work, and we must correct the impression that most of us have fallen into that 'There must be profits or there can be no wages,' and learn that 'There must be wages or there can be no profits.'

"The primary intentions, therefore, seem to be these:

"To raise wages generally.

"To lower working hours generally.

"To raise commodity prices by agreement.

"To curb cut-throat competition.

"To abandon unfair competition practice.

"To restrict the potential production of each unit.

"To cultivate individual cost data—uniform cost accounting.

"This cannot be looked upon as deliberate price fixing, but will lead to price stabilization. Profits will be considered, but these, too, will be controlled.

"General Johnson, who is to head the Industry Control Board, is hard-boiled, but he is anything but a bureaucrat. He will expect each trade and industry to do much of its own dictation and regulation.

"Already a long list of trade associations are ready to propose codes of fair competition and otherwise to play their part in the partnership with government that President Roosevelt proposes as the way to recovery.

"It seems incumbent upon us to take steps toward the formation of a code in our industry so that we may be prepared when General Johnson starts up his machinery. It is incumbent on us, too, who are already members of this Association to acquaint those new members within our industry with the advisability of aligning themselves with us and subscribing to the benefits which are sure to accrue to the general well being of our industry.

"Primarily, this Association was established and organized as an educational program. The greatest work of the Association, in my opinion, can be done along educational lines. The government, however, apparently intends to broaden the field of Association work and is recognizing what some of the Associations have done prior to this time in the formation of what we all know as 'Institutes.' We all know that our membership a few years ago spent a very considerable amount of money in the formation of institutes.

"I refer now to the 'Warm Air Furnace Institute'; I refer to our 'Furnace Pipe and Fittings Institute.'

(*Continued on page* 81)

Editorial Index for 1943

Advertising, Selling, Display

Davis Brothers Sells Special Storm Sash to Maintain Pre-War Volume..... Mar., 44
Cummings' Summer Service for Oil Burners and Stoker Users ..... Apr., 35
Peoria Appliance Sales Holds Sales Volume by Selling Insulation ..... June, 38
Business Is Still Where It Always Was—In the Prospect's Basement..... Aug., 39
Jobber-Dealer Repair Campaign..... Sept., 38
Winterize Your Home Program..... Sept., 48
You Can Satisfy 80 Per Cent of Your Heating Complaints by Telephone (Part I)..... Oct., 54
do (Part 2)..... Nov., 50
do (Part 3) ..... Dec., 38
Letters Build Service Volume..... Dec., 40

American Artisan Surveys

The Dealer Situation in War and Post War, by C. E. Price..... June, 19
Fuel Saving Program..... July, 39
Necessary Replacement Needs of 3,843 AA Readers ..... Aug., 26
American Artisan Heating Equipment Survey Aug., 27
The Furnace Situation..... Aug., 31
What Washington Is Doing About the Furnace Situation (OCR, p. 33) (WPB, p. 35) (OPA, p. 37)..... Oct., 32
Replacement Furnaces in 1944—Equitable Distribution of 200,000 Furnaces..... Nov., 30
do ..... Dec., 22
200,000 Replacement Distribution by States and Counties (Part 1)..... Nov., 34
do (Part 2) ..... Dec., 23

Association Activities

National Warm Air Heating & Air Conditioning, Annual ..... Jan., 121
Association Activities ..... Feb., 54
Association Activities ..... Mar., 63
The Wisconsin Convention ..... Mar., 64
The Michigan Convention..... Apr., 53
The New York Convention..... Apr., 55
Association Activities ..... Apr., 57
Association Activities ..... May, 65
Indoor Climate Institute, A National Program to Explain Air Conditioning, by P. B. Zimmerman ..... June, 28
New National Sheet Metal Association Organized ..... June, 31
A New National Association Is Formed to Represent Furnace Dealers, Sheet Metal Contractors and Allied Trades..... June, 52
Sheet Metal Distributors Talk War Problems. June, 53
NWAH&ACA Mid-Year Meeting..... June, 54
Illinois Association, In Convention Assembled Votes to Join a National Organization.... June, 56
Calling All Association Members—New National ..... July, 28
Association Activities ..... July, 78
Association Activities ..... Aug., 69
Sheet Metal Contractors National Association Votes Officers and By-Laws..... Sept., 39
Association Activities ..... Sept., 70
Sheet Metal Contractors National—Meet the Officers and Directors..... Oct., 44
Association Activities ..... Oct., 73
Indoor Climate Institute Progress..... Oct., 80
Sheet Metal Contractors National Association Report—Board of Directors Meet..... Nov., 61
National Sheet Metal Distributors Meet..... Nov., 68
Association Activities ..... Nov., 70
Association Activities ..... Dec., 64

Authors

Ayers, William ..... Jan., 82
Boeddener, George.....Apr., 28; May, 34
Cavellier, J. J..June, 36; Aug., 44; Sept., 50; Oct. 50
Claypool, Hazel ..... Jan., 71
Cochran, Virgil .....Feb., 48; Mar., 57
Condron, T. L..... Feb., 37
Cunningham, J. F..... Dec., 47
Dingle, Jos. G..... Jan., 119
Elliott, O. M..... Feb., 34
Enright, Stratford ..... Feb., 41
Gichner, Lawrence E..... May, 62
Hobbs, W. S..... Feb., 34
Konzo, Prof. S...Aug., 65; Oct., 52; Nov., 66; Dec., 35
Kruckman, Arnold.....Jan., 54; Feb., 22; Mar., 34; Apr., 20; May, 30; June, 24; July, 32; Aug., 34; Sept., 34; Oct., 41; Nov., 42; Dec., 26
Levy, M. I..... Oct., 72
Mansion, B. F..... Dec., 54
Marsalis, Martin E..... Jan., 97
Miller, Lorin G..... Sept., 66
Narowetz, Jr., Louis..... Jan., 107
Narowetz Heating & Ventilating Co..... Jan., 110
Neubecker, William.....Mar., 60; May, 44; Dec. 42
Nichols, H. M.....Aug., 51; Sept., 55
Nyland, J. E..... Jan., 109
Pearson, C. J..... June, 29
Petty, Sr., R. Hamlin..... Sept., 36
Phelps, H. R..... Apr., 41
Price, C. E..... June, 19
Roberts, Arthur .....Feb., 52; May, 24; July, 35; Aug., 64; Sept., 41; Oct., 70
Rowley, C. L..... July, 66
Sanderson, H. F..... Jan., 86
Sedgwick, F. G..... June, 30
Sharp, H. S..... Mar., 33
Sisney, H. F..... June, 38
Watson, Geo. H..... Dec., 40
Williams, Allen W..... .....Apr., 24; May, 28; June, 26; July, 68; Aug., 66; Sept., 68; Oct., 68; Nov., 64; Dec., 58
Zideck, Ernest E....Feb., 42; Mar., 56; Apr., 44; May, 54; July, 57; Aug., 54; Sept., 58; Oct., 61

Bookkeeping and Cost Accounting

A Costing and Incentive Method for Shop Welding Operations—Part 1, by Virgil Cochran ..... Feb., 48
do—Part 2..... Mar., 57
Overhead in 1943, Under Ceilings, Must Be Corrected Monthly, by Arthur Roberts.... Feb., 52
A General Incentives System for Controlling Production and Costs, by E. E. Zideck..... Apr., 44
12 Guide Posts to Survival, by Arthur Roberts May, 24
Monthly Profit and Loss Statement by Arthur Roberts ..... July, 35
Carry-Back, Carry-Over Loss Provisions Stabilize Earnings, by Arthur Roberts..... Aug., 64
Simplified Payroll System (3 Forms), by H. Hamlin Petty, Sr..... Sept., 36
Estimated Income and Victory Tax, by Arthur Roberts ..... Sept., 41
You Can Avoid Penalties by Systematizing Tax Recordings, by Arthur Roberts..... Oct., 70

Controls

Bonnet Temperatures—Check to Save Fuel... July, 46
Controls on Forced Air Systems..... July, 50
High Limit Switch in Gravity Control..... July, 51
Fuel Conservation—The Hard Way, by S. Konzo ..... Oct., 52

Cooling, Evaporative

Evaporative Cooling Is a Post War Possibility Worth Planning for Now, by H. F. Sanderson ..... Jan., 86

Duct Construction

The Development of No-Metal Ducts..... Jan., 73
The Construction of Large Ducts Using "Substitute" Materials—Narowetz, Nyland *Masonite*, Narowetz *Careystone*..... Jan., 107
Metal Screws Require Special Procedure in Cement-Asbestos Board ..... Apr., 50
War Worker Dormitory Heating System.... May, 37
Asbestos-Cement Ducts—with Ceiling and Wall Forming Sides..... Nov., 55

Dust Collection

More Machines on the Same Fan and Motor, by H. R. Phelps..... Apr., 41
More Machines on the Old Fan and Motor (Part 1), by H. M. Nichols..... Aug., 51
do (Part 2)..... Sept., 55
Check the Fan and Motor Before Adding More Branches to an Old Collecting System, by B. F. Mansion..... Dec., 54

Engineering Design Data (Heating)

Simplified—but better—Gravity Systems.... Jan., 91
Cut Off Second Floor Returns..... Jan., 82
CO_2 Plus Stack Temperature Shows Efficiency Feb., 34
Simplified—but better—Gravity Systems.... Mar., 41
The War Housing Manual..... Mar., 49
Simplified—but better—Gravity Systems.... Apr., 36
Simplified—but better—Gravity Systems.... May, 46
War Housing Construction Standards..... June, 35
Simplified—but better—Gravity Systems.... Aug., 40
Heat Loss Through Concrete Slab Floors.... Oct., 49
FHA's Official Determination of Furnace Adequacy ..... Nov., 47
How to Check Gravity Furnace Size..... Dec., 35

Fabrication—Sheet Metal

Fish Hold Construction Suggests a Better Way to Line Vats..... Mar., 54
Where's the Rivets? By Lawrence E. Gichner May, 62
Positioning Fixtures Pay for Themselves in Any Run Over 20 Welded Units..... July, 62
"Paper Doll" Pattern Technique Saves Metal in Cutting ..... Dec., 47
All-Welded 14-Gauge Soaking Kettles..... Dec., 50
Range Hoods—Stove Jacks—Heat Stops.... Dec., 52

Fabrication—Temporary Dies and Fixtures

For Fabricating a War Product — Marine Tank, by Ernest E. Zideck..... May, 54
For a War Product—Diluting Tank, by E. E. Zideck ..... July, 57
Panel Raising Rig, Assembly Fixture, Bolt Lock, by Ernest E. Zideck..... Aug., 54
Ammunition Box Liner, by Ernest E. Zideck. Sept., 58
Machine Gun Cartridge Loader, by E. E. Zideck ..... Oct., 61

Fabrication—War Products

Aluminum Boxes and Drawers, by Martin E. Marsalis ..... Jan., 97
Incendiary Bomb "Snuffer," by Stratford Enright ..... Feb., 41
Fabricating War Products (Plane Fuselage, Wings, Beams, Rudder), by Ernest E. Zideck ..... Feb., 42
Incendiary Bomb "Remover," by Ernest E. Zideck ..... Mar., 56
Outboard Motor Spare Parts Boxes..... May, 51
Positioning Fixtures Pay for Themselves in Any Run Over 20 Welded Units..... July, 62
Mechanics' Work Benches—RUSH..... Aug., 60
Electric Motor Spare Parts Box..... Nov., 59
"Paper Doll" Pattern Technique Saves Metal in Cutting ..... Dec., 47
All-Welded 14-Gauge Soaking Kettles..... Dec., 50

Filters

Air Filters Play Important Role in Maintaining Health and Business, by C. L. Rowley. July, 66

Fuel Saving

Cut Off Second Floor Returns and Save Fuel, by Wm. Ayers..... Jan., 82
"Stop Fuel Waste" Campaign in Sketches... Feb., 32
CO_2 Plus Stack Temperature Shows Efficiency, by O. M. Elliott and W. S. Hobbs.. Feb., 34
Fuel Conservation—Our War Contribution (E) ..... July, 25
The Fuel Situation, by Arnold Kruckman... July, 32
Check to Save Fuel..... July, 39
Here's How to Run Your Campaign..... July, 40
Fuel Prospects for the Coming Winter..... July, 41
Furnace Cleaning ..... July, 42
Casing Insulation ..... July, 42
Combustion Efficiency (Coal)..... July, 43
do (Oil and Gas)..... July, 44
Chimney Draft ..... July, 45
Bonnet Temperatures ..... July, 46
House Insulation ..... July, 47
Resistance in Duct Systems..... July, 48
Controls on Forced Air Systems..... July, 50
High Limit Switch in Gravity Control..... July, 51
The Fan Delivery..... July, 52
Duct Insulation ..... July, 53
Filter Condition ..... July, 54
Fuel Conservation—The Hard Way, by S. Konzo ..... Oct., 52
Forced Air Heating Is the Key to Heating Economy and Conservation, by M. I. Levy.. Oct., 72

Fume Removal

Vaned Manifold, Horizontal Slot, Oxide Cleaning Fume Removal System (Norton C. Marshall) ..... Jan., 105
More Machines on the Same Fan and Motor, by H. R. Phelps..... Apr., 41
More Machines on the Same Fan and Motor—Part 1, by H. M. Nichols..... Aug., 51
do Part 2..... Sept., 55
Check the Fan and Motor Before Adding More Branches to an Old Collecting System Dec., 54

Furnace Cleaning

Better Home Heating's Cleaning Service... Aug., 41
Aggressive Cleaning and Repair Campaign Ends Summer Slump..... Sept., 46
Letters Build Service Volume..... Dec., 40

Gas Heating

Water Heaters—Gas and Oil-fired..... Feb., 18
Loans on Frozen Gas Furnaces..... Mar., 28

General Business

The "Buy-in-Advance" Plan (E)..... Jan., 53
Individual and Firm Taxes in 1943, by Joseph G. Dingle ..... Jan., 119
This Industry Needs an Expediter (E)..... Feb., 13
The Housing Situation..... Feb., 16
Service Men Deferment..... Feb., 18
Maximum Price Regulation No. 251..... Feb., 20
Our Situation Under CMP—Arnold Kruckman ..... Feb., 22
The Warehouse Price Schedule for Sheets... Feb., 24
The Victory Tax..... Feb., 26
A Costing and Incentive Method for Shop Welding Operations (Part I), Virgil Cochran ..... Feb., 48
Overhead in 1943, Under Ceilings, Must Be Corrected Monthly, by Arthur Roberts.... Feb. 52
Better Get Acquainted with OPA and WMC (E) ..... Mar. 21
Loans on Frozen Gas Furnaces..... Mar., 28
Electric Motors Wanted..... Mar., 30
WPB's Washington Information Office..... Mar., 32
The War Housing Manual..... Mar., 49
Incendiary Bomb "Remover," by E. E. Zideck Mar., 56
A Costing and Incentive Method for Shop Welding Operations (Part 2), by Virgil Cochran ..... Mar., 57
Summer Heating Plant Service (E)..... Apr., 17
Save the Stove Pipe..... Apr., 27

A General Incentives System for Controlling Production and Costs, by E. E. Zideck..... Apr., 44
How Costs Are Reduced..... Apr., 47
"C" Card for "Service" Men..... Apr., 70
Furnaces in the Post-War Period (E)..... May, 23
12 Guide Posts to Survival, by Arthur Roberts May, 24
New Tire Program (OPA)..... May, 26
Ceramic Heaters and Stoves..... May, 32
Easier Heating Repairs..... May, 32
Steel Recovery Progress..... May, 33
We Have Settled Down to Winning the War (E)..... June, 17
The Dealer Situation in War and Post War, by C. E. Price..... June, 19
The Register and Grille Situation, by C. J. Pearson..... June, 29
OCR—Office of Civilian Requirements..... June, 32
Fuel Conservation—Our War Contribution (E)..... July, 25
Clarification of the Register Situation..... July, 36
We Need "Concrete" Help from Washington (E)..... Aug., 25
Necessary Replacement Needs of 3,843 AA Readers..... Aug., 26
American Artisan Heating Equipment Survey Aug., 27
The Furnace Situation (L-22)..... Aug., 31
Our "Bedrock" Economy, by Arnold Krukman Aug., 34
Women Sheet Metal Operators..... Aug., 58
Carry-Back, Carry-Over Loss Provisions Stabilize Earnings, by Arthur Roberts..... Aug., 64
The Furnace Situation (E)..... Sept. 29
Simplified Payroll System (3 forms), by R. Hamlin Petty, Sr..... Sept. 36
Jobber-Dealer Repair Campaign..... Sept., 38
Estimated Income and Victory Tax, by Arthur Roberts..... Sept., 41
Steel Supply Behind Demand..... Sept., 42
Furnace Advisory Committee to OPA..... Sept., 42
Protection Against Cancellation..... Sept., 42
WPB—No Metal Liners Permitted..... Sept., 45
FHA—Furnaces Must Have Liners or Equivalent..... Sept., 45
Winterize Your Home Program..... Sept., 48
Dealers Must Stretch Furnace Supplies (E). Oct., 31
What Washington Is Doing About the Furnace Situation..... Oct., 32
OCR Is Doing This..... Oct., 33
WPB Is Doing This..... Oct., 35
OPA Is Doing This..... Oct., 37
WPB Shifts Production Control to Local Office..... Oct., 38
New Scrap Drive..... Oct., 98
We Should Plan Now for 1944 Distribution (E)..... Nov., 29
Replacement Furnaces in 1944—Equitable Distribution..... Nov., 30
do..... Dec., 22
How the 200,000 Furnaces Must Be Divided.. Nov., 33
Furnaces Installed by States and Counties and Replacements Available on 200,000 Basis..... Nov., 34
do..... Dec., 23
Congress to List Civilian Needs..... Nov., 43
Furnaces for 1944..... Nov., 43
What OPA Is Doing for the Furnace Situation Nov., 43
"Schoolroom" Heaters Not Rationed..... Nov., 44
Truck Tires..... Nov., 44
Money for Small Plants—SWPC..... Nov., 44
Let's Keep Furnace Distribution on a Voluntary Basis..... Dec., 21
Post War Materials Control..... Dec., 26
Decentralization of Form Processing..... Dec., 30
How to Find Materials..... Dec., 30
Definition of Equivalent Insulation (Furnace Liners)..... Dec., 31
Controlled Materials Reserve..... Dec., 31
Contracts in Tight Labor Areas..... Dec., 31
Scrap Drive Goes On..... Dec., 32
WPB-547—Replaces PD-iX..... Dec., 32

Heating—Defense Houses

Mechanical Warm Air Heating in Demountable, Pre-fabricated War Worker Houses. Jan., 78
Furnace In-the-Chimney..... Feb., 29
Gravity Furnace in the "Six-Family, Two-Story Apartment"..... Mar., 46
155 Pounds of Duct, 12 Hours of Labor, 420-Pound Furnace..... Apr., 32
War Worker Dormitory Heating System.... May, 37
Standardized Gravity Systems in Tri-City Area..... Aug., 42
Gravity, Coal Minimum Critical Materials Systems in Tri-Cities War Housing..... Nov., 48

Heating—General

Central Furnace Heat Is the Dream of Many Farm Families, by Hazel Claypool, Farm Wife..... Jan., 71
Furnace In-The-Chimney..... Feb., 29
Twenty Floor Mushrooms Keep Floors Warm in a Vaulted Ceiling Church..... Aug., 46
How to Check Gravity of Furnace Size..... Dec., 35

Housing—Programs and Accomplishments

The Housing Situation..... Feb., 16
The War Housing Manual..... Mar., 49
War Housing Construction Standards..... June, 35
FHA New House Inspection..... July, 36
FHA Time Payment Plan (fuel)..... July, 41
FHA Survey of Post-War Housing Needs... Sept., 64

Insulation

Peoria Appliance Sales Holds Sales Volume by Selling Insulation..... June, 38
Casing Insulation..... July, 42
House Insulation..... July, 47
Duct Insulation..... July, 53
Winterize Your Home..... Sept., 48

Maintenance and Repair

CO_2 Plus Stack Temperature Shows Efficiency, by O. M. Elliott and W. S. Hobbs.. Feb., 34
Cummings' Summer Service for Oil Burners and Stoker Users..... Apr., 35
Dirt Is Responsible for Most Oil Burner Service Calls, by J. J. Cavellier..... June, 36
How to Get Materials for Maintenance and Repair..... July, 26
Troubleshooting the Electrical Apparatus on Oil Burner Service Calls, by J. J. Cavellier Aug., 44
Jobber-Dealer Repair Campaign..... Sept., 38
The Combustion Chamber—Key to Success or Failure in Burning Oil, by J. J. Cavellier. Sept., 50
Excess Air, Stack Temperature, Draft—The Three Guides to Flame Efficiency, by J. J. Cavellier..... Oct., 50
You Can Satisfy 80 Per Cent of Your Heating Complaints by Telephone—Part 1..... Oct., 54
do Part 2..... Nov., 50
do Part 3..... Dec., 38
How to Check Gravity Furnace Size..... Dec., 35

Manpower

Servicemen Deferment..... Feb., 18
Service Mechanics Exemption..... Mar., 27
The Labor Situation (War Manpower Commission)..... Mar., 36
The 48-Hour Week Order..... Mar., 37
More Labor Shortage Areas..... Apr., 26
WMC's Essential Industries..... May, 33
Selective Service Form No. 42B (Register Essential Fathers)..... June, 32
Women Sheet Metal Operators (Edw. G. Budd)..... Aug., 58
War Labor Board—Collective Bargaining Unions..... Sept., 84
WPB Lists 16 Incentive Guides..... Oct., 66

National Warm Air Heating and Air Conditioning Association History—By Allen W. Williams

Chapter
1—The Association's Formation—1914..... Apr., 24
2—The First Years—1914—1917..... May, 28
3—Research Program Established—1917.... June, 26

4—Association Goes to First World War.... July, 68
5—Research, Oil Burners, Forced Air, Gravity Code, Research Residence..... Aug., 66
6—Research Residence Dedicated—Publicity Program Revived ..... Sept., 68
7—1927-1932—Association Changes Name... Oct., 68
8—1932—A Year of Research Progress..... Nov., 64
9—NRA Starts and Stops..... Dec., 58

National Warm Air Heating and Air Conditioning Association Says:

Introduction by H. S. Sharp, President..... Mar., 33
How Many Furnaces? by Geo. Boeddener, Man. Dir. ..... Apr., 28
Furnace Manufacturers' Opinions of Post War Products, by Geo. Boeddener, Man. Dir. ..... May, 34
Is There Glamor in Research? by F. G. Sedgwick ..... June, 30
Air Filters Play Important Role in Maintaining Health and Business, by C. L. Rowley. July, 66
Dealer Training Books Covering All Warm Air Heating Activities, by S. Konzo..... Aug., 65
The Forced Warm Air Conferences, by Lorin G. Miller ..... Sept., 66
Forced Air Heating Is the Key to Heating Economy and Conservation, by M. I. Levy Oct., 72
Hold Everything—We've Got an Idea, by S. Konzo ..... Nov., 66
Post War Market for Warm Air Heating.... Dec., 28

Oil Heating

Water Heaters—Gas and Oil Fired..... Feb., 18
Chart Determines Amount of Oil in Tank... Feb., 36
Chart Shows if Oil Consumption Is in Step with Period Rations, by T. L. Condron..... Feb., 37
Summer Heating Plant Service (E)..... Apr., 17
Fuel Oil Ration Stubs..... Apr., 26
Fuel Oil Record..... Apr., 27
Next Winter's Fuel Oil Rationing Program.. May, 43
Dirt Is Responsible for Most Oil Burner Service Calls, by J. J. Cavellier..... June, 36
Troubleshooting the Electrical Apparatus on Oil Burner Service Calls, by J. J. Cavellier Aug., 44
Oil Conversion Change..... Sept., 35
The Combustion Chamber—Key to Success or Failure in Burning Oil, by J. J. Cavellier Sept., 50
Oil Conservation Program Dropped..... Oct., 43
Excess Air, Stack Temperature, Draft—The Three Guides to Flame Efficiency, by J. J. Cavellier ..... Oct., 50
MPR-165, Amended—Maximum Prices for Oil Burner Repair and Service..... Nov., 52
Oil for Replacement Burners..... Nov., 63
Fuel Oil Conversion..... Nov., 63
Period Two Oil Rations..... Dec., 32

Patterns

Heavy Gauge Blow Pipe Fittings, by Wm. Neubecker (2 and 3-Prong Junction)..... Mar., 60
Air Conditioning Fittings—Angular Boot-Rectangle to Round, by Wm. Neubecker... May, 44
Air Conditioning Fittings—Transition Offset Fitting ..... Dec., 42

Price Regulations—OPA

Repricing Services (Supplementary Order 38) Apr., 19
Fuel Oil Ration Stubs..... Apr., 26
Truck Tires and Replacements..... June, 18
Furnace Advisory Committee to OPA..... Sept., 42
Price Adjusting Provisions..... Oct., 43
Accommodation Sales Prices..... Nov., 43
The Stove Order—Ration Order 9-A..... Sept., 82
MPR-14—Sale of Used A. C. Apparatus..... May, 27
MPR Price Schedule 45—Roofing Products... May, 27
MPR-136—Blower-Filter Ceiling Prices..... Feb., 15
MPR-165, Amended—Maximum Prices for Oil Burner Repair and Service..... Nov., 52
MPR-188—Blower Ceiling Prices..... Feb., 15
Ceiling on Firepots..... Mar., 32
Amendment 10 ..... Apr., 19
Amendment 9, Order No. A-1..... Aug., 57
Steel Furnaces Granted 9 Per Cent Increase in Selling Price..... Nov., 29
MPR-204—Frozen Materials Sales..... Oct., 39
MPR-236—Boiler Conversion Parts..... May, 27
OPA Repair Parts Advisors..... Oct., 82
MPR-251—Maximum Price Regulation..... Feb., 20
Milwaukee OPA suggested forms..... Mar., 22
Conversion Grate Ceilings..... Mar., 32
Will Be Revoked..... Apr., 18
RPS-49—The Warehouse Price Schedule for Sheets ..... Feb., 24
Resale of Iron and Steel Products (Sheet Price Ceiling) ..... July, 34
Special Warehouse Prices — (Amendment 17) ..... Aug., 36

Priority Regulations

American Artisan's Priority Digest..... Jan., 53
American Artisan's Priority Digest..... Jan., 56
The Basic Priorities System..... Jan., 56
L or M Order Appeals..... Nov., 63
CMP—Controlled Materials Plan..... Jan., 58
Our Situation under CMP, by Arnold Kruckman ..... Feb., 22
Products Under CMP..... Mar., 25
CMP Standard Certification..... Mar., 31
Materials for Small Construction..... Apr., 26
Compliance Check for CMP..... Apr., 26
CMP Changes in Regulations 1, 3, 4..... Apr., 69
Interim Order Conversion..... May, 27
New CMP Class B Symbols..... May, 27
Uprating Changes—CMP-3 ..... June, 18
Material Still "Short" ..... June, 32
How to Get Materials for Maintenance and Repair ..... July, 26
Steel Delivery Changes (CMP-4) July, 26; Aug., 36
Revised CMP-4B List..... Aug., 72
CMP—Interpretation 14—CMP Reg. 1..... Sept., 35
Interpretation 16—CMP Reg. 1..... Oct., 84
Interpretation 19—CMP Reg. 1..... Nov., 95
CMP-5—Welding Rod Is Not MRO..... July, 31
MRO Records ..... July, 95
Hand Tools ..... Aug., 36
Rerating MRO Orders (Direction 12)..... Oct., 82
Labor Excluded in MRO..... Nov., 63
PR-1—Interpretation 3 — Rejecting Rated Orders ..... July, 95
Interpretation 3—Must Ship Rated Orders... Sept., 35
PR-3—Simplified Certification..... Jan., 57
PR-3—MRO for Labor Only..... Oct., 39
PR-7—CMP Facsimili Signatures..... Aug., 72
PR-11A—PRP Interim Procedure..... Mar., 30
PR-11A—Amended ..... Apr., 67
PR-12—AA-3 for War Housing..... Feb., 19
PR-16—Orders to Be Appealed Locally..... Mar., 31
PR-16—L or M Order Appeals..... Nov., 63
PRP—The Production Requirements Plan... Jan., 58
PRP—Interim Procedure ..... Mar., 30
RO 9-A—The Stove Order..... Sept., 82
RO-11, Amendment No. 62—Oil for Hot Water ..... June, 18
WPB—Electric Motors Wanted..... Mar., 30
WPB—Information Office ..... Mar., 32
WPB—A-708-18—Welding Rod for Repair... May, 26
WPB Shifts Production Control to Local Offices ..... Oct., 38
WPB-547 (PD-iX)—Incompleted Forms.... Nov., 44
WPB-547—Replaces PD-iX..... Dec., 32
WPB-825—Abolished ..... Dec., 29
WPB—Copper Recovery—Revised Program. July, 94
L-13-A—Metal Office Furniture and Equipment ..... Jan., 116
L-22—Furnace Production Limitation Order on Furnaces ..... Jan., 67
L-22-a—Supplementary Limitation Order on Furnaces ..... Jan., 67
L-22—Furnace Concentration ..... Feb., 18
L-22-a—Can I Use Steel Furnaces..... Mar., 25
L-22—The Furnace Situation..... Aug., 31
L-22—The New Furnace Order..... Aug., 33
L-22—Must Ship Rated Orders..... Sept., 35
L-22—WPB—"No Metal Liners Permitted". Sept., 45
L-22—FHA—"Furnaces Must Have Metal Liners or Equivalent"..... Sept., 45

L-23-c—Coal Stoves for Oil Users..... Feb., 19
L-29—Metal Signs ..... Jan., 114
L-31—Natural Gas Order..... Jan., 68
L-38—Industrial Refrigeration Equipment.. Jan., 69
A. C. Equipment ..... May, 26
A. C. Repair Under MRO..... July, 30
L-41—Stop Building Order..... Jan., 60
L-41 Revised ..... Apr., 18
L-41—"Winterize" Campaign ..... May, 32
L-41—New Materials List..... Oct., 84
L-41 Amended ..... Nov., 97
L-56—Fuel Oil Order..... Jan. 68
Petroleum Distribution Order (replaces L-56) ..... July, 36
L-62—Metal Household Furniture..... Jan., 114
L-63—Suppliers Limitation Order..... Jan., 62
More Jobbers Exempted..... July, 30
L-74—Oil Burner Production..... Jan., 69
Oil Burner Stock Control..... July, 30
L-75—Coal Stokers ..... Jan., 69
L-77—Metal Windows ..... Jan., 114
L-79—Metal Plumbing & Heating Eqnipment Jan., 127
Stoves Under L-79 and P-84..... Mar., 30
L-79 Is Still Important..... Apr., 27
L-79—New Appeal Form, PD-851..... May, 32
The New Order L-79..... Sept., 33
Heating Controls Taken from L-79..... Oct., 39
L-123 — Industrial Machinery — Fans and Blowers ..... Jan., 70
L-123—Sale of Attic Fans..... May, 26
L-123—Small Motor Replacement..... Aug., 36
L-126—Industrial and Commercial A. C. Eq. Jan., 70
L-142—Metal Doors, Frames and Shutters.. Jan., 115
L-174—Manufactured Gas ..... Jan., 70
L-219—Inventory Limitation Order L-219... Feb., 15
L-228—Asphalt Roofing Restrictions..... Mar., 27
L-280—Fan and Blower Order..... Mar., 29
Amended—If You Have Blowers in Stock, You Can Sell Them..... Apr., 31
Sale of Attic Fans..... May, 26
Fans, Blowers Need AA-5..... July, 31
L-318—Certain Electrodes Restricted..... Oct., 43
M-9-C—Curtailment of the Use of Copper... Jan., 115
M-21-b—Steel Warehouse Order..... Jan., 61
M-21-e—Tin and Terne Plate..... Jan., 115
M-21-b—A-10 Sheet Situation ..... Feb., 14
M-21-e—Tin Plate Released ..... Mar., 27
M-21-e—Terne for Repair..... June, 18
M-21-c—Changes in Steel Orders..... July, 30
M-21-b2—Jobbers' Comments ..... Sept., 31
M-21-b2—Definition of Jobber and Dealer... Dec., 29
M-38-c—Restrictions on Use of Lead..... Jan., 116
M-38—Lead Eased ..... July, 31
M-43-a—Use of Tin..... Jan., 116
M-43—Tin Order Revised..... Aug., 73
M-43—Rewritten ..... Dec., 56
M-126—Iron and Steel Conservation..... Jan., 116
M-126—Registers May Be Made..... Feb., 14
M-126—Appeal for M-126..... Mar., 32
M-126—WPB Must Approve Gutters..... Oct., 39
M-251—Conversion Grate Ceilings..... Mar., 32
MRO—A. C. Repair Under MRO..... July, 30
Welding Rod Is Not MRO..... July, 31
MRO Records ..... July, 95
MRO for Labor Only..... Oct., 39
Rerating MRO Orders..... Oct., 82
Labor Excluded in MRO..... Nov., 63
ODT-21—Truck Tire Registration..... Feb., 18
ODT-21—To Get More Truck Gas..... Feb., 19
ODT—Report Your Idle Truck (CW-N-3 form) ..... Mar., 32
P—The Blanket Orders (P-Orders)..... Jan., 62
P-19-d—Publicly Financed Defense Housing. Jan., 63
P-19-h—Privately Financed Defense Housing Jan., 63
P-19—AA-3 for War Housing..... Feb., 19
P-55—Construction of Defense Housing..... Jan., 63
Unused P-55's Recalled..... July, 31
P-84—Plumbing and Heating Emergency Repairs ..... Jan., 63
AA-1 for Heating Repairs..... Feb., 14
AA-1 Repair Application..... Feb., 15
Stoves Under L-79 and P-84..... Mar., 30
Our New P-84..... Sept., 30
New Preference Rating Order P-84..... Sept., 32
Background for P-84, by Arnold Kruckman ..... Sept., 34
Questions and Answers on P-84..... Oct., 40
P-84 Amended ..... Dec., 29
P-100—Repairs to Property and Equipment. Jan., 64
P-100 Revoked ..... July, 94
P-110 Remodelling Projects..... Jan., 64
P-126—Cooling System Priorities..... Feb., 18
PD's—Individual Certificate ..... Jan., 59
PD-1A's Filed Locally..... Mar., 26
PD-1A—New PD-1A ..... Mar., 31
PD-1A—New Application Form..... Apr., 22
PD-1A's to $500 Handled Locally..... June, 32
Petroleum Distribution Order No. 13 Replaces L-56 ..... July, 36
Oil for Replacement Burners..... Nov., 63
PD-105—New Housing Form..... Mar., 26
PD-200c—Materials for Small Construction.. Apr., 26

Sheet Metal—Architectural

Reconstruction in Lead Alloy Sheet (GAR).. Apr., 48

Shop Fabrication—Drying and Finishing

Air Blast Drying Ovens for Aircraft Landing Mats ..... Feb., 47
Adjustable Infra-Red Drying Oven..... Mar., 53
Radiant Energy (Infra-Red) Drying..... May, 59
Radiant Energy (Infra-Red) Drying (Part 2) ..... June, 48

Taxes

Individual and Firm Taxes in 1943, by Jos. G. Dingle ..... Jan., 119
The Victory Tax..... Feb., 26
Employers Tax Calendar..... July, 36
Carry-Back, Carry-Over Loss Provisions Stabilize Earnings, by Arthur Roberts..... Aug., 64
Estimated Income and Victory Tax, by Arthur Roberts ..... Sept., 41
You Can Avoid Penalties by Systematizing Tax Reductions, by Arthur Roberts..... Oct., 70

Ventilation

Troup Transport Ventilation System..... June, 43
Ship Ventilation (Drawings, Details, Construction) ..... Oct., 57

Washington Letter—By Arnold Kruckman

New Fangled Heating Equipment..... Jan., 54
Our Situation Under CMP..... Feb., 22
The Situation Facing "Small Business"..... Mar., 34
Nugent's "Pay Now for Post War Delivery".. Apr., 20
Furnaces Under CMP..... May, 30
The Work-for-Small-Shops Situation..... June, 24
The Fuel Situation..... July, 32
Our "Bedrock" Economy..... Aug., 34
Background for P-84..... Sept., 34
OCR—Its Aims, Policies and Limitations... Oct., 41
Heat Controls for Fuel Conservation..... Nov., 42
Post War Materials Control ..... Dec., 26

Association Activities

National Contractors

At a recent meeting of the Board of Directors of the Sheet Metal Contractors' National Association, the following members were appointed as standing committees for the benefit of our industry:

Contractors Membership Committee

J. Harvey Manny, chairman, 4600 West Monroe St., Chicago, Ill.
Patrick S. Varden, 290 Green St., Albany, N. Y.
Carl Gundlach, 910 Columbus St., Sandusky, Ohio
Frank Kramer, 3145 So. K. K. Ave., Milwaukee, Wis.
R. E. Walsh, 50 West 10th St., St. Paul, Minn.
B. Kolbenschlag, 3616 N. Grand Blvd., St. Louis, Mo.
Elmer Schartow, Haley & Larkin St., Midland, Mich.

Manufacturers and Jobbers

Hugh A. Daniel, 134 Washington St., Newburg, N. Y.

Roofing Committee

Patrick S. Varden, Chairman, 290 Green St., Albany, N. Y.
Jacob E. Merrick, 800 E. Madison St., Louisville, Ky.
R. E. Walsh, 50 West 10th St., St. Paul, Minn.

Industrial Sheet Metal Committee

Rudy Guenther, Chairman, 2336 Milwaukee Ave., Chicago, Ill.
Louis Trost, 3102 Cherry St., Erie, Pa.
Carl Gundlach, 910 Columbus St., Sandusky, Ohio

Architectural and General Sheet Metal Committee

B. Kolbenschlag, Chairman, 3616 N. Grand Blvd., St. Louis, Mo.
Joseph J. Walter, 326 W. Main St., Ottawa, Ill.

Ventilation Committee

Dion A. Mannen, Chairman, 9104 Woodland Ave., Cleveland, Ohio

Warm Air Heating Committee

Harvey Orton, Chairman, 50 E. Springfield, Barberton, Ohio
Frank Kramer, 3145 So. K. K. Ave., Milwaukee, Wis.

Labor Committee

Louis Narowetz, Jr., 1722 Washington Blvd., Chicago, Ill.

Publicity Committee

E. Carter, Snips Magazine
Ross Mahoney, Sheet Metal Worker
Joseph Wilder, American Artisan

The above committees are open to your views and suggestions on all matters pertinent to the committees that they are appointed on. Please consider yourself a committee of one to correspond with these committees and help yourself and the industry at large through an exchange of ideas.

1944 Convention

Our First National Convention will be held in Chicago, Illinois, near the 15th of January, 1944. Definite date will be announced in next bulletin. The convention will be of two days duration with plenty of action for all who attend. R. Guenther of Chicago has been appointed General Chairman. Committees will be announced later.

Membership

Our group is growing steadily. Nearly two hundred contractors are now enrolled as active members and thirty-five manufacturers and jobbers as auxiliary members.

Make yourself a committee of one to interest your neighboring city and state. We need every state and each contractor in the state.

The Board of Directors of the Sheet Metal Contractors National Association, Inc., has plans for placing your organization before the public in a manner that it will obtain recognition in a national way from architects and general contractors. They also plan to have a Washington representative for the industry. These activities will take much more money for operating costs than we anticipated in our original set-up. Therefore, your Board of Directors has submitted the following "Amendment" for the consideration of voting members at the coming convention in Chicago in January in accordance with Article IX, Section 3 Amendments in the Constitution and By-Laws. Please refer to Article IX, Sec. 1 for your vote on this amendment at the National Convention:

AMENDMENT—ARTICLE II—MEMBERSHIP—Sec. 5—"Dues shall be based on productive payroll as based on the various classifications in the By-Laws of this Association, and shall become due the first of January of each year. Dues to be paid within 60 days of January 1. The minimum annual dues shall be $5.00. Each member shall pay as dues the sum of 2 mills on each dollar of productive payroll for the preceding year. Productive payroll shall be certified by member's Social Security return. Each member shall report to the National Secretary on forms provided by the National Association, between January 1 and 15th, the amount of dues owing. Members may pay more than the actual assessment. Maximum dues shall be $500.00 per annum. Dues shall be paid to local or state associations, who, in turn, shall pay the National Secretary. Where no local or state association exists, the dues shall be paid direct to the National Secretary."

"Associate or Auxiliary dues shall be $25.00 per year minimum."

AMENDMENT—NAME—The name by which this Association, a corporation, incorporated under the laws of the State of New York shall be known is the Sheet Metal "AND ROOFING" Contractors' National Association, Inc.

Draft Deferment Manpower

At the last regular meeting of the Board of Directors, the question of maintaining an adequate force of mechanics in the industry for the Duration was discussed.

Your Secretary was requested to write the Selective Service and protest the continuous drafting of mechanics in our industry.

Correspondence on the subject seems to show definitely that no blanket policy for deferment of our men will be proposed.

There is only one way to keep your employees i.e. **Immediately**, upon the employee receiving his classification 1-A contact his local service board and ask deferment under 42-A of the Draft Law and prove your case that he is indispensable to the industry. Note that your employee must notify you at once upon receiving his 1-A—if he waits until he is called for induction there is no chance at all of holding him. This is the advice of Draft Headquarters.

Clarence J. Meyer, National Secretary.

◆

Florida

The Roofing & Sheet Metal Contractors Association of Florida, addresses an open letter to all members, associate members and friends regarding a 1944 convention. The 1943 convention was cancelled because of travel conditions and the difficulty of securing convention headquarters.

The past few years have been extremely busy ones for all contractors in Florida because of the great volume of construction for the Army and Navy. Such construction is now greatly reduced in volume, many employees are being called for service in the armed forces and the roofing

(Continued on page 66)

New Products

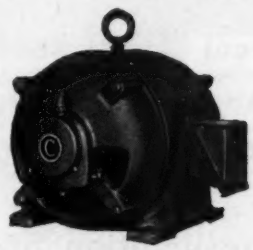
For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 69 and mail to us.

△ Indicates manufacturer not listed in 1942 Directory.
• Indictaes product not listed in 1942 Directory.

74—Protected Motor

Century Electric Co., 1806 Pine St., St. Louis 3, Missouri, offers Century, Form J, general purpose, open rated motors in a new protected design in sizes from 1½ to 15 horsepower.

The upper half of the end bracket is closed to minimize the possibiilty



of dripping liquids or falling solids entering the vital parts of the motor.

Two powerful fans located behind the bearing brackets draw cooling air through the bearing bracket openings, around the bearings, across the windings and to the air passages between the outer surfaces of the magnetic core and the frame—the heated air being expelled through openings at the side and bottom of the frame.

• 75—ZTO Chromate

New Jersey Zinc Company, 160 Front St., New York, N. Y., has entered into the field of chromate pigments Zinc Tetroxy Chromate—known as ZTO Chromate.

ZTO Chromate combines excellent rust-inhibitive properties and good water resistance when formulated in the conventional linseed oil vehicles used in metal primers.

ZTO Chromate, being a pigment of low specific gravity, has less tendency than the heavy metal priming paint pigments to settle on the job. The lighter weight of ZTO Chromate paints makes for easier application, especially spray.

△ 76—Ceramic Stove

Agamatic Range Corporation, Cranford, N. J., has developed a ceramic cooking stove model in connection with the Ceramic Stove Development program of the War Production Board—demonstrated at the National Bureau of Standards on October 28.

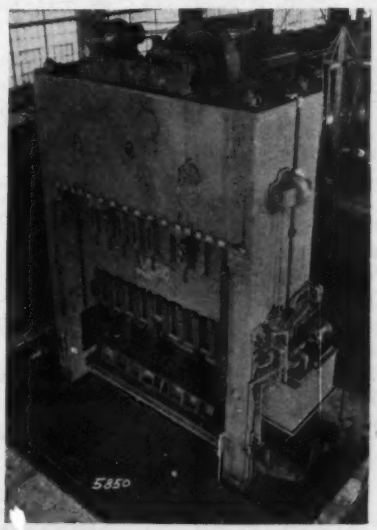
The model is a compact streamlined unit equipped with two hot plates and two ovens. It contains only 80 pounds of metal, mostly cast iron.

The stove is designed to be heated with anthracite or coke and uses only about 10 pounds of fuel in 24 hours. If fired every 12 hours, it can be kept ready for use.

77—Transfer Feed Press

The Verson Allsteel Press Company, 1351 E. 93rd St., Chicago, has designed this Verson Full Eccentric Transfer Feed Press for the handling of the production problems of parts manufacturers and producers of such items as coaster wagons, cooking utensils, stone sections and other reasonably regular shapes.

Built for a large manufacturer of filters, the Verson Full Eccentric Transfer Feed Press, pictured here, is equipped with nine time stations. It can blank, draw, redraw, pierce, size, and emboss 720 filters per hour, untouched by human hand from start to



finish. This huge machine has a capacity of 500 tons and is 138 in. between the housings. All working stations are interchangeable and individually adjustable.

Two points of force application insure an even distribution of pressure across the entire slide area. Slide and frame are of characteristic Verson Allsteel Welded Construction, which offers maximum resistance to torsional twist and deflection.

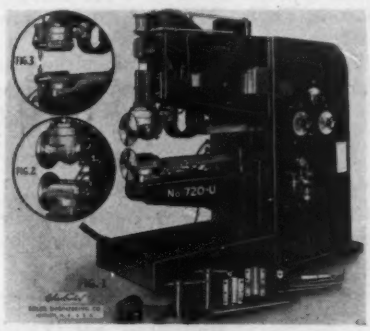
Full eccentric construction provides maximum factor against shaft failure; there is no crankshaft to bend or break. Split cap design bronze-bushed main bearings permit easy renewal and quick adjustment. An extra long "full-thrust" eccentric strap reduces friction between gibs and slide. Barrel type adjusting screws, equipped with buttress threads, remain vertical at all positions of the stroke.

78—Seam-Spot Welder

Eisler Engineering Co., 740 S. 13th St., Newark 3, N. J., has just placed on the market the Universal Resistance welder for heavy duty. The welder is adaptable for Circular and Longitudinal seal welding and by a simple change of electrodes for spot welding operations.

Only the upper seam wheel is power driven by a 1 hp motor of 1425 rpm. Speed reduction is performed by means of a variable speed drive between the limits of ¾ rpm minimum to 2¼ rpm maximum.

The action and construction of this new machine, briefly outlined, involves the following: In either seam or spot welding, the upper electrode attached to a big square ram, sliding in a proper guide-block, is actuated by a double acting air cylinder. Electrode pressure is adjustable by an air pressure regulating valve. The air system includes an air filter, indicating pressure gauge and an automatic lubricator. The welding transformer is available in 100, 150 and 200 KVA and larger sizes, 220 or 440 volts, 60 cycles and provides selection of numerous points of heat regulation by heat set-



tings with dial control, permitting a wide range of materials and thicknesses. Other ranges of voltage and frequencies are available.

All accessories are mounted on a solid, completely arc-welded, box-type frame. The electrodes are made of wear resistant copper alloy of high electrical and thermal conductivity.

The special foot switch for starting the welding operation consists actually of a small and a larger treadle built into a single unit.

The overall dimensions of the 100 KVA machine are: height 88 in., length 93 in. and width 47 in.; the weight is 6200 lbs.

Association Activities . . .

(*Continued from page* 64)

and sheet metal contractor is now giving more attention to necessary civilian repairs and trying to carry on a profitable business under many war imposed difficulties. It is now that the association can function for the good of all. Most of the members realize what the association can do, but are too indifferent to do anything for the association.

A convention in April or May of 1944 will be of great advantage for the following reasons:

1—A chance to discuss your problems with others in your own line of business.

2—A definite plan for activities for the ensuing year may be prepared.

3—Manufacturers and their representatives can meet with you and discuss your requirements and any new methods or products which their research has made available.

4—A fine opportunity to meet your friends and to be sociable will round out the program.

Manufacturers are invited to submit names of speakers, films or any form of convention activity which could be used on the program.

As a contractor in Florida, particularly in one of the larger cities, determine if convention facilities are available and arouse an interest so that an active committee may be appointed.

Show your interest in the association, and act at once.

L. A. Burgess, Secretary,
915 No. Poinsettia Ave., West Palm Beach.

Milwaukee

The Milwaukee Sheet Metal Contractors Association, Inc., met on November 2 at the Schroeder Hotel with quite a few members in attendance.

Important matters were considered and discussed, especially ethics in business, proper and ethical advertisements, preferred mileage to construction workers, legislative matters, etc. The question of raising dues was thoroughly analyzed with Member Marth leading the discussion. The raise was adopted.

The association also made arrangements to have their office at Room 108, 225 East Michigan Street, where committees can meet.

At the December meeting, the election of members for the Board of Directors will take place.

Paul L. Biersach, Secretary.

New York

The New York State Sheet Metal, Roofing & Air Conditioning Contractors' Assn., Inc., will hold their annual convention in Albany, New York, on March 29-30, 1944, at the Ten Eyck Hotel.

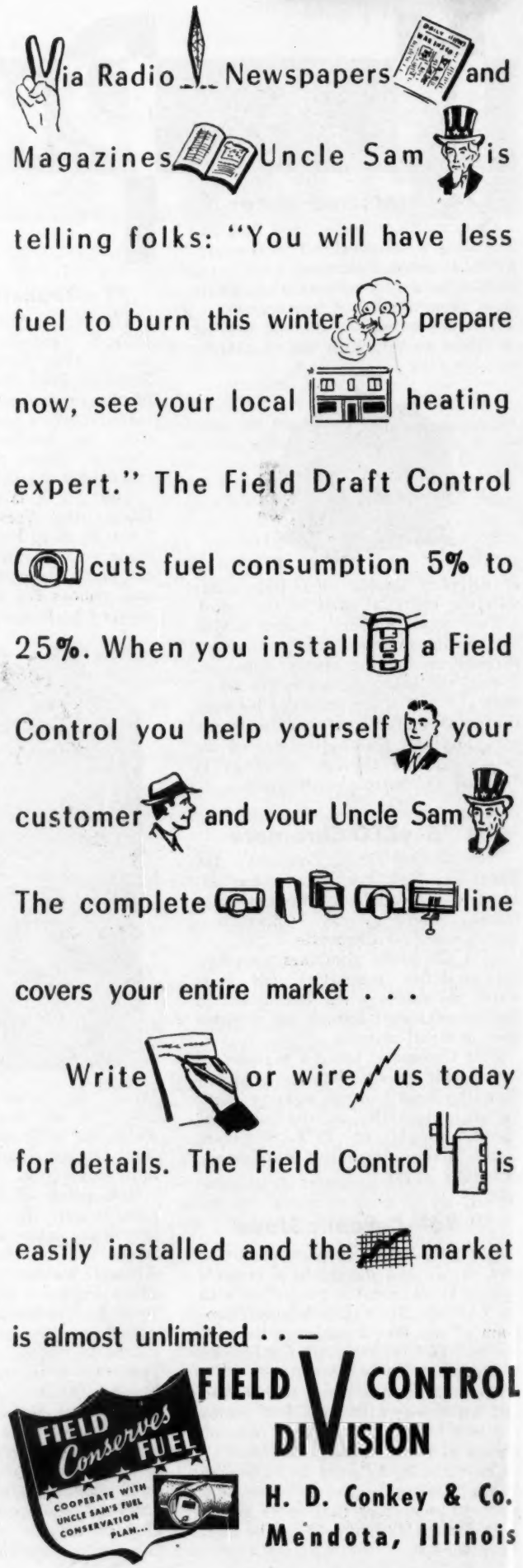
Coming Conventions

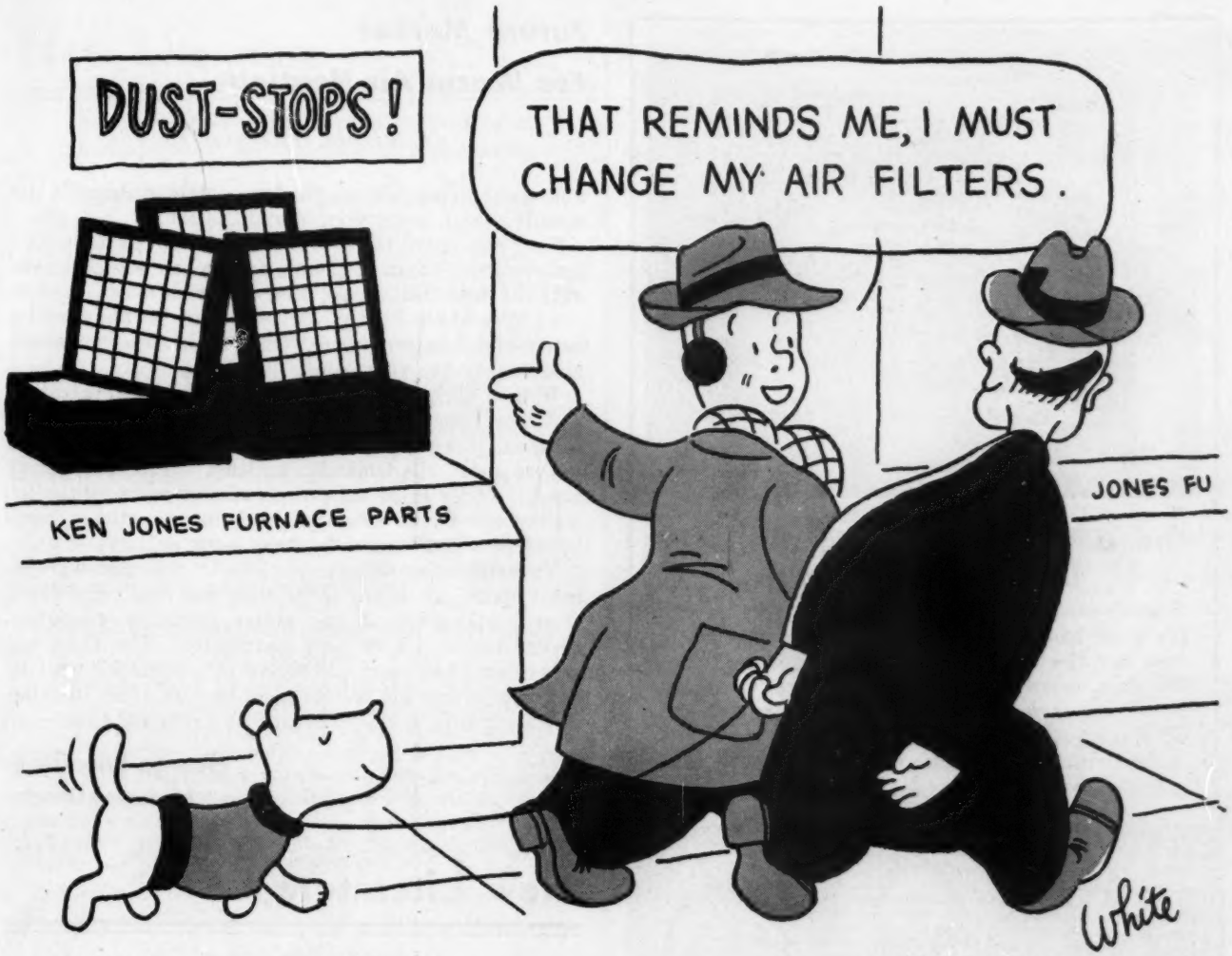
1944

Jan. —Sheet Metal Contractors National Association, Inc. First Annual. Chicago. Definite date to be announced later. R. Guenther, 2336 Milwaukee Ave., Chicago, General Chairman. Clarence J. Meyer, National Secretary, 567 Genesee St., Buffalo 4, N. Y.

Feb. 1 — Sheet Metal and Warm Air Htg. Contr. Assn. of Indiana. Joint Meeting with Indiana Furmets. Hotel Antlers, Indianapolis. Frank G. Sink, Pres., 621 E. Ohio St., Indianapolis.

Feb. 7-8—Sheet Metal Contractors Association of Wisconsin, Inc., 30th Annual. Hotel Schroeder, Paul L. Biersach, Secretary, 225 E. Michigan St., Milwaukee.


Via Radio Newspapers and Magazines Uncle Sam is telling folks: "You will have less fuel to burn this winter prepare now, see your local heating expert." The Field Draft Control cuts fuel consumption 5% to 25%. When you install a Field Control you help yourself your customer and your Uncle Sam The complete line covers your entire market . . .
Write or wire us today for details. The Field Control is easily installed and the market is almost unlimited . . —
FIELD CONTROL DIVISION
H. D. Conkey & Co.
Mendota, Illinois
FIELD Conserves FUEL
COOPERATE WITH UNCLE SAM'S FUEL CONSERVATION PLAN...



HOW TO DEVELOP GOOD BUSINESS AND GOOD WILL WITH DUST-STOPS*

MOST OF YOUR customers with forced-warm-air furnaces have probably seen the Dust-Stop advertising now running in *The Saturday Evening Post, Life, Better Homes and Gardens, House Beautiful, and American Home.*

The chances are, they will be mighty glad to know that *you* are the local Dust-Stop dealer . . . all set to improve the efficiency of their furnaces . . . help them save fuel.

These FREE Dealer Helps identify you as Dust-Stop Headquarters

Free direct mail folders: They are attractive mailing pieces which tell the Dust-Stop story . . . imprinted with your name, address, and telephone number.

Free reminder post cards. These are double return cards to follow up the mailing pieces. They make it easy for prospects to order Dust-Stops.

Free Newspaper ad mats: Attention-getting little ads . . . effective reminders that you are the official Dust-Stop dealer.

Free radio announcement scripts: These are cleverly worded one-minute announcements. Turn them over to your local radio station.

Free counter and window displays: Smart-looking displays that stop prospects and remind customers . . . and a manual that shows you how to use them.

Free furnace labels: These constant reminders of your name and service put you first in line for all kinds of furnace business.

You can get telephone listings, too. And, you will receive the new catalog of filter sizes, which enables you to take orders over the phone and—if you wish—fill those orders by mail.

So, if by chance you have not already sent for this great set of business getters, *do so now.* The name of the plan is "Pulling Profits out of the Air." Your distributor knows all about it. Call him *today.*

Owens-Corning Fiberglas Corporation, Toledo 1, Ohio. In Canada, Fiberglas Canada, Ltd., Oshawa, Ontario.

FIBERGLAS*

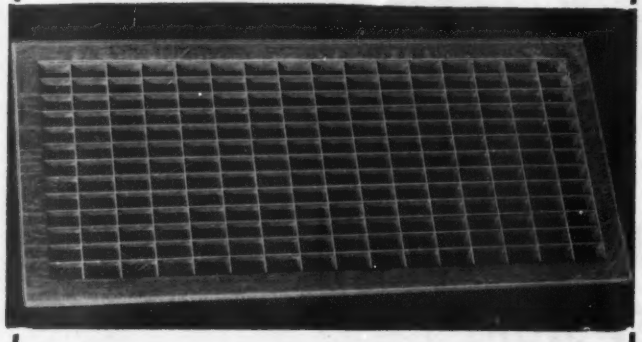
DUSTOP

*T.M. Reg. U.S. Pat. Off.

AIR FILTERS

The FINEST Baseboard Register is AVAILABLE NOW!

There's no need of using anything but the best for your baseboard register installations of today, for the H & C No. 130, which combines the last word in good appearance with the finest construction, workmanship and beautiful metalustre finish, is now being made and is available from stock; it costs no more than others.



H & C No. 265 Return Air Face

Perfect for Maintenance and Repair!

Clean-cut and attractive and as sturdy as its name "NO-FLEX" indicates, the H & C No. 265 unquestionably heads the list of quality-built Return Air Faces. It will pay you to use it on all repair and maintenance installations.

Other H & C items available are the No. 330 and 345 Sidewall Registers, the ever popular No. 200 Floor Registers and the popular H & C Nos. 69, 74, 75 and 86 Air Conditioning Designs. See current catalog, No. 42, for details.

H&C

HART & COOLEY MANUFACTURING CO.

World's Largest Manufacturers of Registers, Grilles, Furnace Accessories

HOLLAND • MICHIGAN

Future Market For Warm Air Heating

(*Continued from page* 28)

automatic firing, automatic fan control, automatic air cleaning and automatic humidification.

7. Home comfort, with automatically controlled air temperature, offers the home owner and prospect benefits not included in any other home devices.

8. Warm air heating systems can be financed by banks and loan companies; this service was not available twenty-five years ago.

With a very sizable replacement and modernization and new home building market waiting for us after the war, if we develop it, the industry might be hard put to meet all demands, at least for a number of years. Under those conditions all segments of the industry are bound to enjoy profit opportunities, compared to which there has been none such.

To attain our sales objectives in the post-war we must strike out boldly. The time has now come for a close cooperation of the entire industry—manufacturer, dealer, jobber and distributor. The time has now come *when every purchaser* of a warm air gravity or forced warm air system must be sure of an installation according to the Standard or Technical Code.

George Boeddener
Managing Director

◆

New Literature . . . . .

For your convenience in obtaining copies of new literature use the coupon on page 69.

295—Wales Hole Punching Units—Cat. C

Wales-Strippit Corporation, 345 Payne Ave., North Tonawanda, N. Y., announces the third edition of Catalog "C" just off the press. This catalog illustrates and describes Wales Type "AA," "C," "CA," and "Z" hole punching units.

Twenty-eight pages carry large illustrations, specifications, prices and diagrams.

◆

296—Quickwork Stamping Trimmer

The Quickwork Division of Whiting Corporation, Harvey, Illinois, announces publication of bulletin QW-115, describing the new improved type of Quickwork Stamping Trimmer.

This machine trims, forms, beads or flanges both large and small stampings in straight line production or job shop work. Equipped with simplified accurate control, this Trimmer provides an economical method of trimming stampings accurately and with speed.

◆

297—B-W Air-X-Hauster

G. C. Briedert Co., 634 S. Spring St., Los Angeles 14, is distributing a 16-page file catalog (AIA No. 30D1) covering their B-W (made of wood) Air-X-Hauster for all types and styles of commercial and industrial buildings, homes. Redwood is preferable, but may be constructed of any high-grade lumber, also fabricated from various other materials.

Construction details are given, and there is a layout for mounting on roof curb. A page is devoted to B-W Air-X-Hausters with fan assembly and there are capacity and performance tables.

New Literature . . . .

For your convenience in obtaining copies of new literature use the coupon on this page.

298—Wolverine Stack Exhauster

Belanger Fan & Blower Co., engineers and manufacturers of ventilation equipment, 1241 Eighteenth St., Detroit, offers a catalog page covering the Wolverine Stack Exhauster designed to transform any roof ventilator into a power fan exhaust unit. Or, for use in new or old duct systems to make them power exhausters.

◆

299—To Help Hold Mechanics

Excel Heating & Air Conditioning Co., 3717 Belmont Avenue, Chicago 18, is distributing a large dealer-jobber folder, illustrating and describing Streekno, and suggesting a Streeknotizing campaign to help hold mechanics during the slack season. Free news items about Streekno for local papers, newspaper mats, window streamers, window and counter displays, house-to-house solicitation ideas, or personal contact plans are available through jobbers or direct from the manufacturer.

◆

300—Standard Commercial Wrought Coppers

Copper & Brass Research Association, 420 Lexington Ave., New York 17, is distributing a two-page schedule on "Standard Commercial Wrought Coppers and Copper Base Alloys." Copper base alloys have, in the past been numbered in the hundreds, but now 38 alloys are listed which will ordinarily serve most of the requirements for war and peacetime products. Data sheets covering physical and chemical characteristics applicable to each of these alloys are planned to supplement this list.

The association is also distributing a technical book on Pipe and Tube Bending—80 pages.

◆

301—1944 Calendars

David Levow, 308 West 20th St., New York City 11, offers while the supply lasts, the large 1944 calendar with important reference tables on the last page, especially compiled for the trade, giving information on United States Standard Revised Comparison of Wire Gauges; Expansion and Contraction; Diameters, Circumferences, and Areas of Circles; contents of Round Tanks; Physical Properties of Metals; Sizes of Drills to be used for corresponding U. S. Standard Taps; Slopes of Roofs; also Weights and Measures and useful rules of calculation.

Requests should be made on printed stationery.

◆

Consumer Literature

Salvage Manual for Industry—The Salvage Division of WPB, 1100 H Street, N. W., Washington—E. F. Mulligan—has a limited number of copies of a "Salvage Manual for Industry" for distribution without charge. This is a 243-page book just published by the Government.

Copies are also available from the Superintendent of Documents at Washington at 50 cents each. Coupon No. 302.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

74	75	76	77	78
295	296	297	298	299
300	301	302		

Name .....
Company .....
Address .....
Are you Manufacturer——Jobber——Dealer——

HUSSEY
COPPER
TODAY'S FIGHTING METAL
. . . A VITAL FACTOR IN BUILDING THE WORLD OF TOMORROW!
Consult HUSSEY Engineers about your post war planning.
HUSSEY
C. G. HUSSEY & COMPANY
(Division of Copper Range Co.)
Rolling Mills and General Offices: PITTSBURGH, PA.
Warehouses in Principal Cities

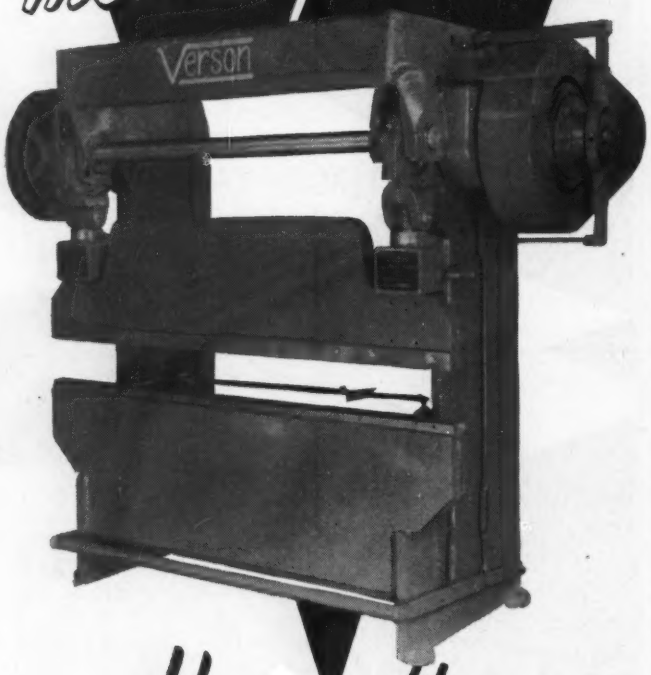
a Verson

JUNIOR

PRESS BRAKE

CAN

Increase Your Profits



Here's How

●It is axiomatic that, if you handle more jobs at lower operating costs, your profits will swell. A Verson Junior Press Brake in your shop enables you to handle more work. It gives you the added speed, versatility and job quality of a big brake—but, at small machine economy. Built in seven sizes, there is a Verson Junior Press Brake for every purpose—every purse.

Send for details . . . Ask to see a Verson engineer

VERSON ALLSTEEL PRESS CO.

9302-A So. Kenwood Avenue, CHICAGO 19, ILLINOIS

With the Manufacturers . . .

Lockformers Help Rebuild London

Lockformer Company, 4615 Arthington Street, Chicago, is shipping quantities of Lockformers for post-war work. A shipment is now on the way, destined for London where they will be used in the post-war era to help rebuild stricken areas.

◆

J. Bedford French, Deputy Regional Director in Charge of Priorities and Compliances, Fifth Area of the War Production Board, which covers Ohio, West Virginia, Kentucky, Western Pennsylvania and Eastern Indiana, has resigned to become vice-president and general manager of **Lamneck Products, Inc.**, of Middletown, Ohio, it was announced recently by Perl S. Miller, President.

During World War I, Mr. French served in the United States Navy as a Naval Aviation Instructor, remaining in the service from 1917 to 1921.

◆

P. W. Stickney has been appointed sales representative for **The Allen Corporation**, Detroit, according to B. K. Paget, sales manager. Mr. Stickney will cover the Chicago territory, with an office at 549 W. Washington Boulevard, Chicago.

Mr. Stickney and his organization have rendered an engineering service to architects, contractors, builders and the plumbing, heating and ventilating trade for a number of years. Associated with him are a designing engineer, R. G. Rosenbach, and two sales engineers—B. B. Harter and M. W. Norman.

Lawrence H. Gardner has been appointed to the engineering staff of **The Allen Corporation**, Detroit, according to J. J. Hogan, general manager. Mr. Gardner will devote his attention to design improvements in the Allen line.

◆

Obituary

George Grove Gebhart, sales manager, **The Hotstream Heater Company**, since coming to Cleveland 21 years ago, passed away recently after an illness of more than a year. Mr. Gebhart was born in Dayton, Ohio, in 1886. Surviving are his wife and his nephew, Howard P. Gebhart.

◆

W. C. Williamson, 84, one of the founders and president of the **Williamson Heater Company**, died November 26. In ill health for a number of years, pneumonia was the immediate cause of death.

W. C. and his brother Andrew Wilson Williamson launched the business in 1890—opening a retail furnace and stove store—and were known as Bennett & Peck. Four years later it became the Peck, Williamson Heating & Ventilating Co. and in 1914 the present name was adopted.

In 1902 the Williamsons opened their first foundry in Wellstone, Ohio. A. W. Wilson was the prime mover in the company's entrance into the manufacturing field.

◆

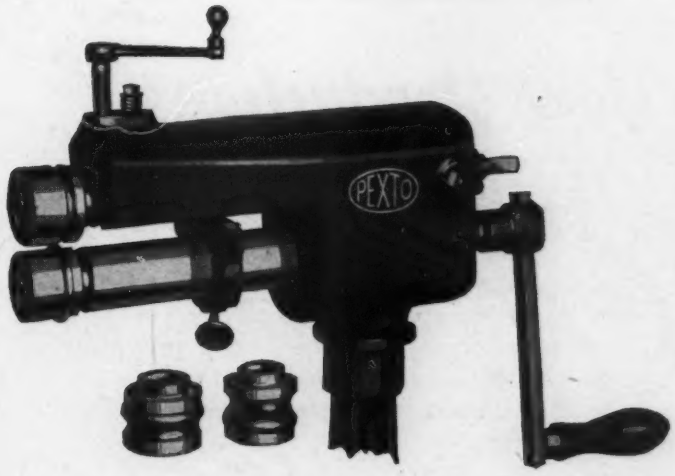
Share Your Steel

"SHARE YOUR STEEL" is the appeal that goes out to fabricators as the War Production Board seeks a voluntary reallocation of supplies to make them stretch through the remainder of the year.

All consumers are asked to cancel third and fourth quarter orders for steel products if they have on hand large inventories in relation to current consumption. In this way other plants may obtain tonnage for their needs. A field force of 400 men is visiting plants, asking them to share their supplies.

EQUIPMENT THAT *DELIVERS*...

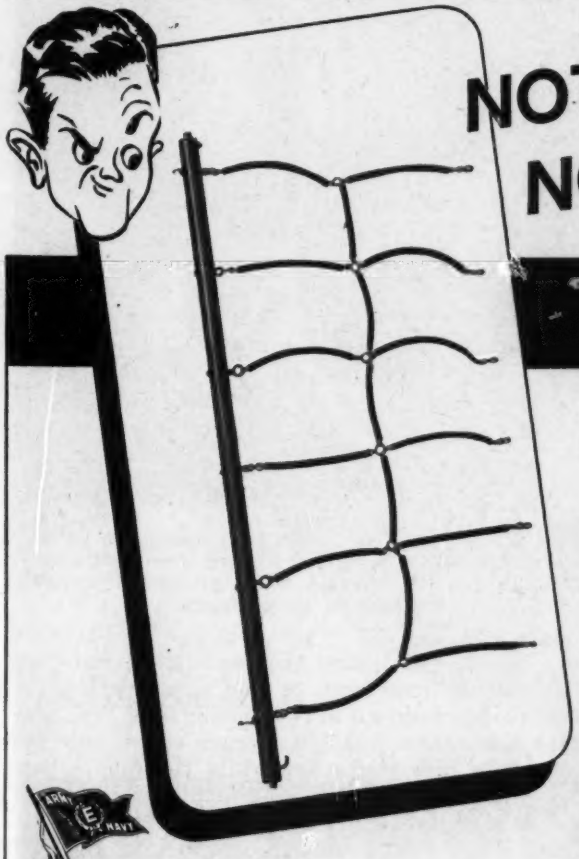
Whether it's an intricate or common commercial Sheet-Metal Job—PEXTO *extensive* Machine and Tool Line has the production answer.



BEADING MACHINES

PEXTO

THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHINGTON, CONNECTICUT, U. S. A.



NOT a gate... NOT a geoponic gadget

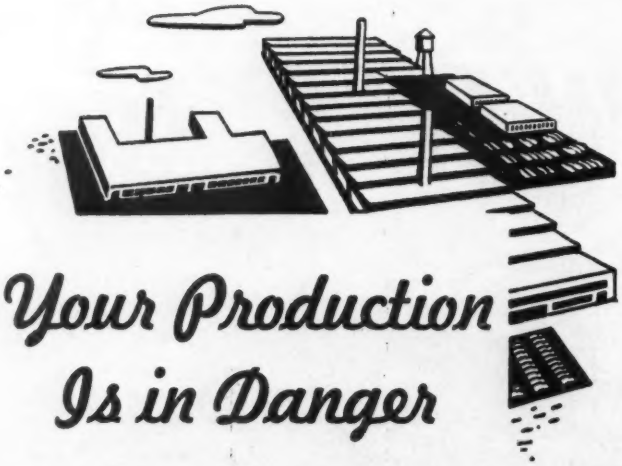
WHAT IS IT?

Sorry, we can't publish details, for this is one of many war products now being manufactured by **PAYNE** for the U. S. Government. ★ Until Victory is won, we may be unable to make *any* more furnaces or parts. But, meanwhile, **PAYNE** heating equipment is proving its sound design and inbuilt quality as never before. ★ Today's **PAYNEHEAT** owners will be tomorrow's best salesmen—helping make new friends and customers for our dealers—because they know from experience that **PAYNE** *builds to endure.*

PAYNEHEAT

NEARLY 30 YEARS OF LEADERSHIP

Payne FURNACE & SUPPLY CO., INC. BEVERLY HILLS, CALIFORNIA



Your Production Is in Danger

Shivering employees in cold, drafty rooms cannot work at top speed and accuracy. Install a Directherm Unit Heater. It will keep your plant warm—EVENLY warm—and the morale up. Absentee sickness costs many times more than a Directherm.

It Is Not too Late for This Winter If You Order Immediately

DIRECTHERM UNIT HEATERS

Made in six sizes (300,000—1,700,000 BTU). For coal, gas, and oil. No pipe or duct work. Easy installation. Automatic controls. No maintenance.

AIRTHERM MANUFACTURING COMPANY

706 S. SPRING AVE. ST. LOUIS 10, MO.

Range Hoods— Stove Jacks

(*Continued from page* 53)

pieces to length and to cut special panels such as those which line the exhaust opening. A wood working circle saw was set up in an outside shop and all cement-asbestos was cut on this saw. A steel saw was used. This cutting was done in an open outdoor shop so that the dust made in cutting could blow away.

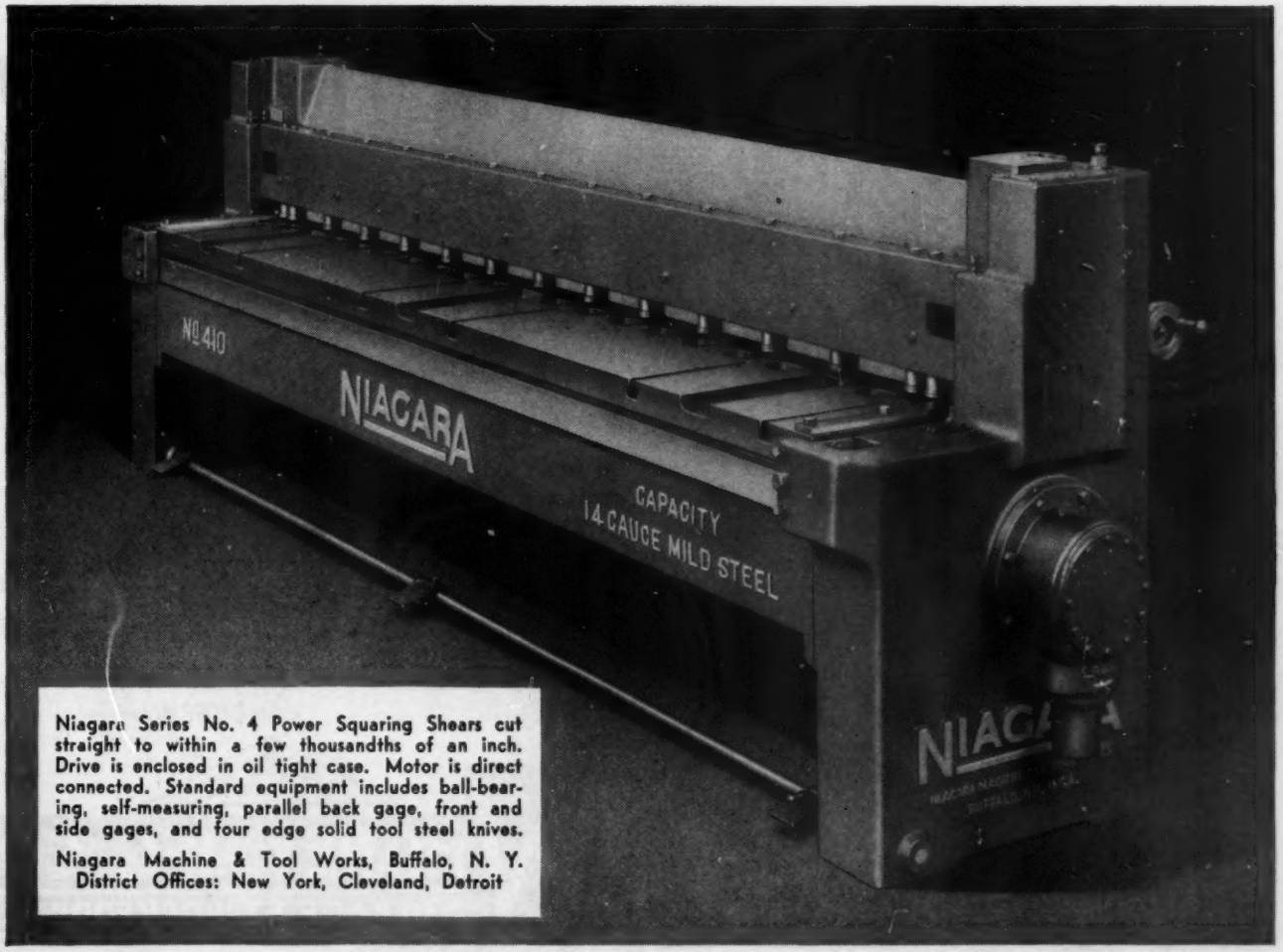
Special twisted-shank roofing nails, with washers under the head, were used for all nailing.

Stoves and Stove Jacks

As stated, the Camp Ellis barracks are heated with stoves placed three stoves to a barracks floor; stoves are back towards the wall. As shown in one photograph, the wall behind the stove is protected by nailing a 4-foot wide cement-asbestos sheet to the wall studding before the wall was winterized. This heat-stop runs from the floor to the ceiling.

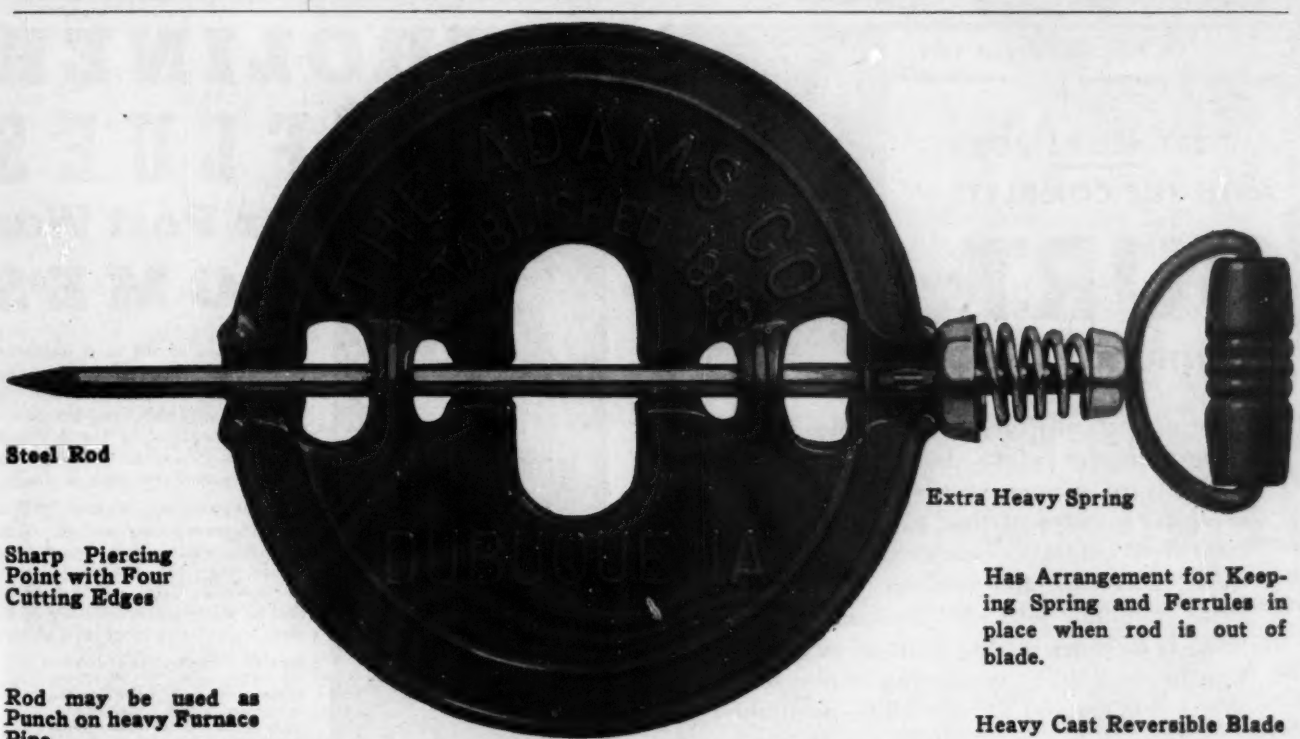
The smoke pipe from each stove runs through a square hole in the ceiling and combustible materials are protected from heat by the square-bottom-on-pitched-roof jack shown in two photographs. The photograph of several jacks in storage shows how the round smoke pipe sticks down into the square base for connection to the stove pipe, and how the round pipe is held equi-distant from the square collar by six flanges. The result is that the round pipe does not touch the square collar, but allows an opening around the pipe. This opening is protected against rain by a rain collar as shown.

Iowa Sheet Metal Contractors built some 5,000 jacks in its Des Moines shop and trucked them to Camp Ellis for erection. Flanges which provide air space around pipe show clearly.



Niagara Series No. 4 Power Squaring Shears cut straight to within a few thousandths of an inch. Drive is enclosed in oil tight case. Motor is direct connected. Standard equipment includes ball-bearing, self-measuring, parallel back gage, front and side gages, and four edge solid tool steel knives.

Niagara Machine & Tool Works, Buffalo, N. Y.
District Offices: New York, Cleveland, Detroit



Steel Rod

Sharp Piercing Point with Four Cutting Edges

Rod may be used as Punch on heavy Furnace Pipe

Extra Heavy Spring

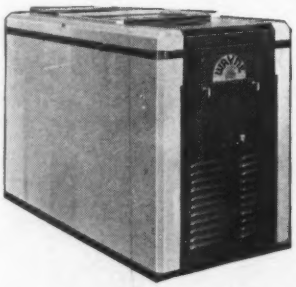
Has Arrangement for Keeping Spring and Ferrules in place when rod is out of blade.

Heavy Cast Reversible Blade

• 1883 — Sixty Years of Service — 1943 •

ADAMS DIAMOND SMOKE PIPE DAMPER
MANUFACTURED BY
THE ADAMS COMPANY
DUBUQUE, IOWA, U. S. A.

WAYNE OIL-FIRED



FURNACE UNITS

60,000 to 400,000 B.T.U.

PROMPT SHIPMENT

on proper priority

The complete line of Wayne oil-burning furnaces and burners is again available.

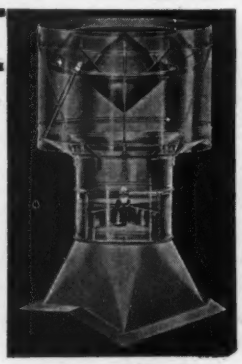
WAYNE OIL BURNER CO., 9112 Glasgow Avenue
Fort Wayne 4, Indiana

WAYNE'S V-DAY LINE WILL BE COMPLETE

OIL-FIRED, GAS-FIRED, COAL-FIRED FURNACES, STOKERS, BOILERS, WATER HEATERS. CONVERSION BURNERS FOR OIL AND GAS.

LINE UP WITH WAYNE FOR POST WAR PROFITS

FREE-FLOW FAN TYPE



. . . GET MORE JOBS WITH THE COMPLETE

BURT

VENTILATOR LINE

Your opportunity for ventilator sales is greater today than ever before. Industry is alert to the necessity of proper ventilation—receptive to a capital investment that pays dividends with improved employee working conditions, reduced accidents and spoilage. Get *more* of these ventilator jobs with the complete BURT line. It includes quality units of advanced design to meet every ventilating requirement at prices that get you the contract—profitably.

Write BURT today!

THE BURT MFG. CO.
ROOF VENTILATORS • OIL FILTERS
EXHAUST HEADS
301 Main St., Akron 11, Ohio

SEND FOR CATALOGS
Burt Engineers are glad to help on plans

WHITNEY LEVER PUNCHES

NUMBER FOUR "B" PUNCH

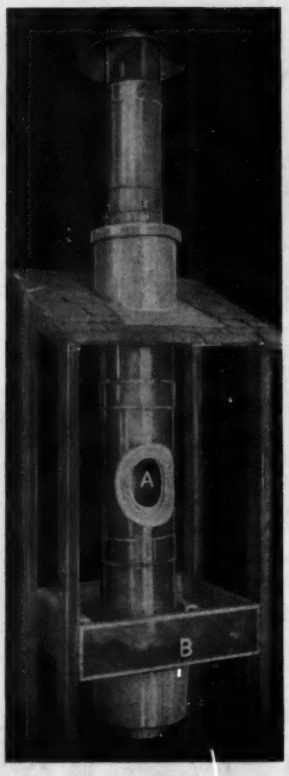
This punch for sheet metal work has a capacity of ¼" through 16 gauge. Weight 3 lb. Length 8½". Depth of throat 2". Complete tool includes three punches and three dies of specified sizes with die adjusting key. A time-saver for your up-to-date shop.

And here's another handy tool for the modern shop — the No. 2 Punch. Length 23". Capacity 5/16" through ¼" iron, weight 12 lbs., depth of throat 1-11/16". Punches and dies 3/32" to ½" by 1/64".

NUMBER TWO PUNCH

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL.

VITROLINER FLUES for Post War HOMES



Will be one of the most important and radical changes in home construction. The Vitroliner Type "E" Flue is suspended from the ceiling line and requires no foundation of any kind. Vitroliner can also be built into partition walls if desired.

New heat saving features will be incorporated in the post war Vitroliner flue which will be much lower priced than the masonry chimney it replaces. Draft will be double that of the masonry chimney of the same height and cross section area.

Type "E" Vitroliner extends from the ceiling line "B" thru attic space and roof as illustrated in display model. "A" breakaway section shows inner vitreous enameled steel construction and pre-formed Fyrex asbestos insulation. The outer casing sections form a continuous wall of vitreous enameled steel.

Listed by Underwriters Laboratories

Write for details and Folder

Condensation Engineering Corporation
2515 ARCHER AVE. CHICAGO 8, ILL.

The contract required 5,000 of these jacks; they were made in Des Moines and painted there in the spray booth and were delivered by the truck-load to camp.

Furnaces

Also in the company's contract were 21 large warm air heating furnaces and duct systems for special buildings. All this duct work was made on the site using asbestos board panels nailed to light wood nailing strips placed outside the duct. In most cases this ductwork was made in 8-foot lengths and consisted mostly of straight sections with air outlets in the bottom of the duct. No registers were used, but a metal plate was suspended below the square hole to spread the air out over the room.

◆

Replacement Furnaces in 1944

(*Continued from page* 25)

VERMONT

No. 1	Total Furnaces Installed	21,601
No. 2	% of National Total	.31%
No. 3	Allotment of 200,000 Quota	620

Counties	No. 4 Total Furnaces Installed	No. 5 % of State Total	No. 6 Allotment of State Quota (No. Furnaces)
Addison	788	3.65	23
Bennington	1,179	5.46	34
Caledonia	1,757	8.13	51
Chittenden	3,161	14.64	91
Essex	432	2.00	12
Franklin	1,479	6.85	42
Grand Isle	221	1.02	6
Lamoille	502	2.32	14
Orange	972	4.50	28
Orleans	1,336	6.18	38
Rutland	2,614	12.10	75
Washington	2,815	13.03	81
Windham	1,786	8.27	51
Windsor	2,559	11.85	74

New Solder Order

(*Continued from page* 56)

defined in Order L-292; Cheese vats, clarifiers, and separators (milk and egg processing plant sizes only), coolers, heaters, and preheaters, dehydrators, fillers, filters, forewarmers, hot wells, homogenizers and high pressure sanitary pumps, pasteurizers, sanitary centrifugal and positive pumps, vacuum pans, and sanitary pipe lines in connection with soldering on sanitary ferrules and fittings —not more than 40% tin by weight.

(vi) For the repair of fluid milk shipping containers and other dairy equipment—not more than 30% tin by weight.

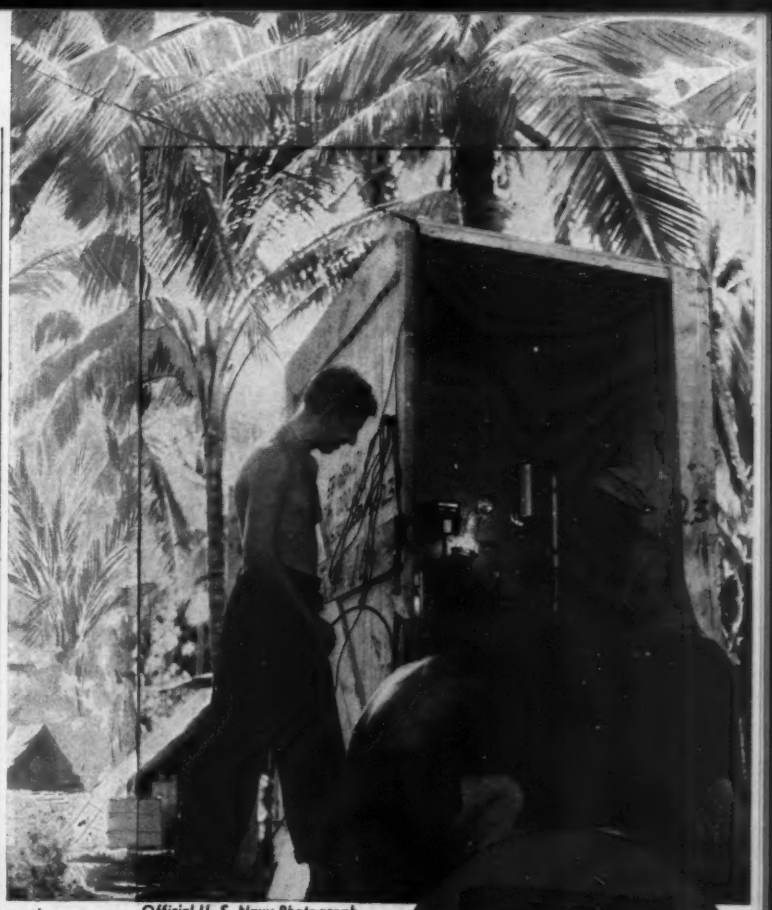
(vii) For the manufacture of electrical fuses—not more than 40% tin by weight.

(viii) For the repair and maintenance of automotive radiators—not more than 30% tin by weight, but only in the form of solid wire or cored wire solder.

(ix) For the repair and maintenance of lap and top combs used in the textile industry—not more than 30% tin by weight.

(x) For the *repair* of automotive bodies and fenders—not more than 3% tin by weight derived from secondary sources only.

(xi) For the repair of gas meters in accordance with



Official U. S. Navy Photograph

HERE'S WHERE White-Rodgers Controls ARE SERVING TODAY

They're "somewhere in the Pacific" helping to keep things cool for our boys who are making it hot for the enemy. Whether they are deep in steaming jungles or high in the icy air, we are proud that White-Rodgers Controls are serving our armed forces with dependability and accuracy.

Today, of course, the greater portion of White-Rodgers manufacturing facilities is devoted to the development and production of military control equipment. But when we return to normalcy these new developments in temperature and pressure control will again serve America's homes and industries with increased efficiency.

HYDRAULIC ACTION CONTROL

WHITE-RODGERS ELECTRIC CO.

1215L CASS AVENUE • SAINT LOUIS, MISSOURI

Controls for Heating • Refrigeration • Air Conditioning

WHITNEY-JENSEN PRODUCTS
30 YEARS EXPERIENCE

"AIR CONDITIONING SPECIAL"
49 in. 20 ga. BENDING BRAKE

Specially designed for sheet metal duct work. Rollaround Undercarriage permits easy moving on the job. Available in plain type, or in combination type for box and pan as well as all kinds of straight bending. Can be used as a bench brake or floor brake as desired.

NO. 5 JR. PUNCH

In handy metal kit box, with holder for 6 extra punches and dies. Thousands in daily use the world over. Capacity, ¼" hole in 16 ga. iron, punches in center of 4" disc. Double-duty depth gauge.

OVER 80 USEFUL SHEET METAL TOOLS

WHITNEY METAL TOOL COMPANY
91 FORBES ST. • ROCKFORD, ILL.

Supplementary Order M-43-b, as amended—not more than 38% tin by weight.

(xii) For wiping lead sheathed cable joints or lead pipe joints—not more than 32.5% tin by weight.

(xiii) For use in the manufacture and repair of industrial instruments (as defined in Conservation Order L-134) and their associated control valves—50% tin by weight: *Provided,* That solder of a lower tin content shall be used whenever its use will not cause damage or change the physical or electrical properties of the part soldered.

(xiv) For the installation and repair of water service pipes connecting the piping of a structure with the outside water main—not more than 38% tin by weight.

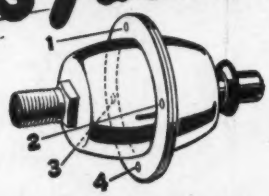
(xv) For all other purposes, not more than 21% tin by weight.

The total quantity of tin which any person may use in the manufacture of solder during any calendar quarter, beginning January 1, 1944, shall be limited to 50% of the quantity used by him in the manufacture of solder during the base period.

(iv) For repair, maintenance or replacement in vessels or shipping facilities pursuant to a preference rating duly established or assigned by the United States Maritime Commission—not more than 90% tin by weight.

(9) *Dairy equipment.* Tin may be used to coat fluid milk shipping containers which are manufactured within the restrictions and in accordance with the provisions of Conservation Order M-200. Tin may be used to manufacture dairy equipment other than such fluid milk shipping containers, but the total quantity used by any person in the manufacture of such other dairy equipment during any calendar quarter beginning January 1, 1943, shall be limited to the quantity used by him for such purposes during the base period. Any dairy equipment may be retinned, provided only that the amount of tin which any retinner may use during any calendar quarter, beginning January 1, 1943, for the retinning of dairy equip-

HOW TO SPOT WELD
4 Times Faster



PROJECTION WELDING SAVES CLEVELAND FIRM 75% IN WELDING TIME

Instead of welding 4 individual spots on this welded job the older way, Harris Products Co., Cleveland manufacturers of vibration insulators, installed a special projection welding die, making it possible to speed production by 4 times the former rate. Perhaps you, too, can profit by adapting projection welding techniques to your work and by using the improved Model J Spot and Projection Welders. Designed for general work, these models contain several new features not found in resistance welders selling for far greater prices. Write today, telling us your problems. We will offer our best possible help at no obligation.

MULTIPLE SPOT WELDING

sketched above on a Muffler Shock Insulator Assembly, made possible a welding rate 4 times greater than could have been reached by individual welds. A special die, designed to weld points 1, 2, 3, and 4 (above) at one contact made this possible. The older way would have to weld point 1, turn the piece, weld point 2, turn the piece again, etc.

PROJECTION WELDING ON UNIVERSAL WELDERS

is a more efficient way to meet schedules. You get more uniform welds from these rugged, simply constructed welders. Use current economically. "Green help" produces uniformly good welds on the Model J Spot Welder.

Send Coupon Today

UNIVERSAL WELDERS

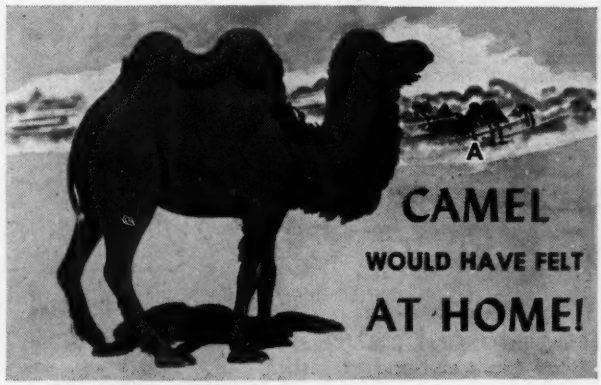
UNIVERSAL POWER CORP., 4898 Euclid Ave. Cleveland 3, Ohio.

Please send complete story on your Spot and Projection Welders and accessories and how they can help me.

NAME .....

ADDRESS .....

CITY..... STATE.....



Until Allen Engineers Took Over...

In a certain drop forge plant, under-roof temperatures in summer hit 170° to 190° Fahrenheit. Floor working temperatures were upward of 120°. O. K. for camels—tough on men intent on high production.

Allen men, wise to the ways of air movement, studied the situation. Seven 60 inch cowl ventilators that had been loafing on the job came off pronto. Equally fast, with the cooperation of local sheet metal men, seven 54-B Type "H" Allen Roof Fans went onto the ridge. With 60 air changes an hour, floor working temperatures moved down within reason, fumes and smoke that had been troublesome also took to their heels.

Allen men are always available to cooperate with you in determining ventilation needs and installing the proper equipment to meet the specific situation. The Allen Corporation, 9751 Erwin Ave., Detroit 13, Mich.

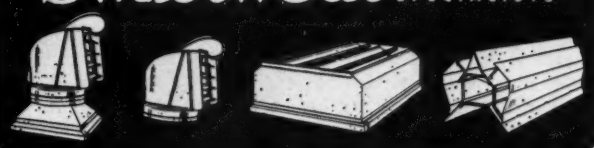
THE Allen CORPORATION
ENGINEERED VENTILATION FOR INDUSTRY

Customer satisfaction

IS YOUR STOCK-IN-TRADE

Not only the kind of work you do, but ***the quality of materials and equipment you install*** "make or break" you with your customers. On roof ventilating jobs use Swartwout Ventilators—scientifically designed, built for performance, ***the highest standard of quality.*** Write for catalog and prices . . to **THE SWARTWOUT CO.,** 18511 Euclid Avenue, Cleveland 12, Ohio

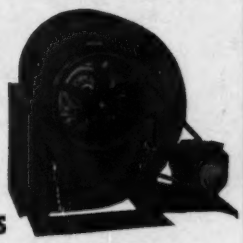
Swartwout VENTILATION SPECIALISTS

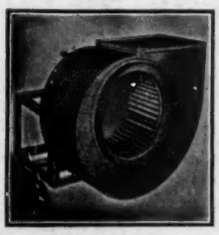


YOUR BLOWER Requirements

AVAILABLE AT

Schwitzer-Cummins Company

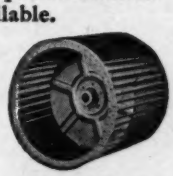




★ **BLOWERS FOR EVERY PURPOSE**

Double Inlet and Single Inlet

HY-DUTY Blowers, 9¾″ to 25″ • Top and Bottom Horizontal, and Top and Bottom Vertical Discharge • Top and Bottom Motor Mounting • Dual Units also available.



★ **CENTER DISC WHEEL**—Double Inlet, Double Width • Reinforced Center Disc • Designed for Modern Air Conditioning and Heating Applications • Sizes, 4½″ to 50″.

★ **ENGINEERING DATA**—Write for Catalogues showing complete Performance Data • Experienced Engineering Department available to help solve your Air Handling Problems.

BLOWER DIVISION
SCHWITZER-CUMMINS COMPANY
1145 EAST 22ND STREET INDIANAPOLIS, U. S. A.

JOIN-UP with SHEETLOCK

"FABRICATING METHODS"

"HOW TO MAKE DUCTS FROM NON-METALLIC MATERIALS"

Is Yours for the Asking

It has been proven, and we are of the firm opinion that the methods used in "FABRICATING METHODS" make the best ducts possible and at the same time at the very lowest cost. This eight-page booklet describes the latest improved methods of fabricating flexible or rigid non-metallic boards.

Write today for this illustrated informative booklet.

THE SHEETLOCK COMPANY

Manufacturers of Sheetlock Self-Fastening Metal Strip

4521 North Clark Street Chicago, Illinois

★

RELIABLE . . DESPITE WARTIME CARELESSNESS

With production equipment under terrific pressure and with hampering personnel problems, users of Randall self-lubricating and self-aligning Pillow Blocks are getting heartening service from these dependable bearings. In war work or production, Randall bearings are always dependable. If you have a bearing problem, perhaps we can help you.

★

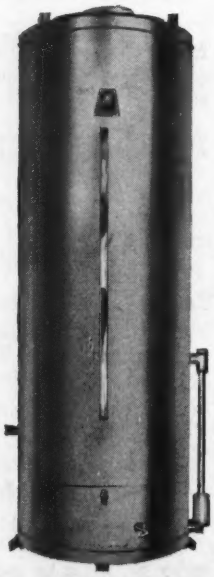
RANDALL GRAPHITE PRODUCTS CORPORATION

Dept. 1211 609 W. Lake St., Chicago, Ill.

Lochinvar

OIL BURNING WATER HEATERS

The SECRET of Lochinvar's Outstanding Success is the MULTIPLE-STAGE BURNER



MICHIGAN TANK & FURNACE CORP.
14101 PRAIRIE DETROIT 4, MICHIGAN

Why wait?

The Herman Nelson Corporation, manufacturers of Heating and Ventilating products, whose advertisement appears on pages 12 and 13 of this issue, has positions available in several cities for sales engineers. Don't wait until after the war to establish yourself with a leading, responsible manufacturer in this industry. If you believe that you could fill one of these positions, send complete information about yourself to

ARMY-NAVY

THE HERMAN NELSON CORPORATION
Manufacturers of Quality Heating, Ventilating and Air Conditioning Products
MOLINE, ILLINOIS

ment, shall be limited to 150% of the quantity used by him for such purposes during the base period.

(10) *Kitchen, galley and mess equipment for the Army or Navy of the United States, the United States Maritime Commission, the War Shipping Administration or the Forest Service of the United States Department of Agriculture.* Tin may be used to coat the foregoing equipment excluding flat ware, to the extent required by the applicable specifications (including performance specifications, unless otherwise directed by the War Production Board) of the service or agency to which such equipment is to be delivered.

(19) *Equipment for preparing and handling food.* In addition to the purposes specified in item (9) of this Schedule with respect to dairy products, tin may be used in the manufacture or repair of the following types of equipment but only to the extent herein indicated:

(i) To coat or to retin articles of equipment used in the process or handling of meat in the meat-packing industry, to the extent that any such article comes into actual contact with meat. The equipment intended to be covered by this provision includes but is not limited to: bacon, combs, hangers, metal molds, shovels, forks and scoops for handling sausage and cooking utensils.

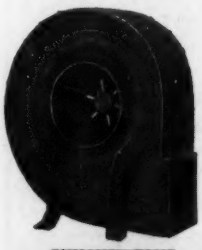
(ii) To coat or retin equipment used in the preparation or handling of any food by institutions or by industrial or commercial establishments, but only such equipment as actually comes into contact with food.

(20) *Tin pipe for use in the repair or maintenance of beverage dispensing units and parts thereof.* Tin pipe may be manufactured only for use in the repair or maintenance of beverage dispensing units and parts thereof, provided that any customer for whom such pipe is manufactured shall return to the manufacturer a quantity of used pipe equal in tin content to that of the new pipe delivered to him.

"We Do a Nice Volume Now—Thanks to CLARAGE EQUIPMENT"

War plants, army barracks and other vital war-time buildings need heating and ventilating, or exhaust and blow pipe installations. This high priority business can be your salvation. Specify Clarage Fans, Blowers, Unit Heaters! Nationally known and Nationally accepted, these highest quality air-handling products help you land the desirable jobs. **Write today for descriptive literature.**

UNIT HEATERS

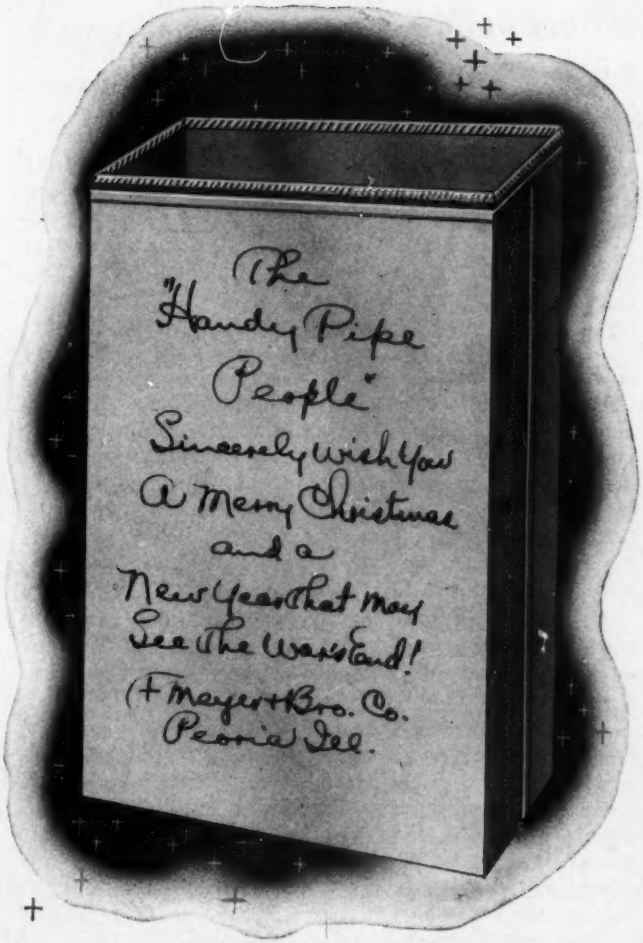


EXHAUST FANS

VENTILATING FANS

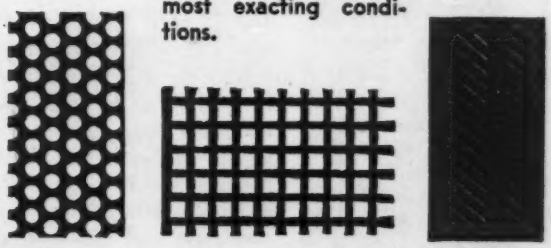
COMPLETE AIR CONDITIONING • COOLING • VENTILATION • FACTORY HEATING • MECHANICAL DRAFT • FANS and BLOWERS for INDUSTRIAL NEEDS

Clarage Fan Company Kalamazoo, Mich.
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES



PERFORATED METALS
ARE ESSENTIAL
In Times of War and Peace

They are used in the manufacture of explosives and ammunition, flame arresters, airplanes, battleships and in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.



The Harrington & King PERFORATING Co.

5649 Fulmore St., Chicago 44, Ill. and 114 Liberty St., New York 6, N.

QUIET MAY OIL BURNERS

PRONOUNCED JER-O-TOR REG. U. S. PAT. OFFICE

GEROTOR

HYDRAULIC PUMPS

GEROTOR is proving its prime importance abroad and at home . . . Serving on the war front with many vital war machines. Conserving on the home front, stretching every drop of oil in May Oil Burners.

May Oil Burner Corp., Baltimore, Maryland

On a world-wide proving ground no job has been too tough for GEROTOR

Badge of Merit

Hundreds of dealers and thousands of home owners recognize that the WEIR-MEYER trade mark on heating equipment is a true Badge of Merit. Since Pearl Harbor, untold numbers of engineers and maintenance men have become WEIR-MEYER boosters. They've learned about WEIR-MEYER from the thousands of installations made for the Armed Forces.

War orders first must be our guide for the duration, but AA-5 civilian orders are being filled as quickly as possible.

Postwar

Now is the time to get the postwar dealership you desire. Find out about WEIR-MEYER—the line whose prewar reputation for highest quality and better performance has been strengthened by an enviable war record.

THE MEYER FURNACE COMPANY

WEIR and MEYER FURNACES — AIR CONDITIONERS
for COAL — GAS — OIL
PEORIA 2, ILL., U. S. A.

KEEP ON BUYING WAR BONDS TO HASTEN POSTWAR DAYS

ATH-A-NOR
Furnace Repair Parts

The furnace choice of dealers who know performance and saleability has been Ath-A-Nor for more than 50 years. Quality, economy and efficiency have always distinguished the Ath-A-Nor line. Replace with Ath-A-Nor to insure maximum performance and fuel economy! And continue to pile up scrap for munitions and see that it reaches government agencies speedily!

MAY-FIEBEGER COMPANY
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR OVER 50 YEARS
NEWARK, OHIO

Letters Build Service Volume

(*Continued from page* 41)

old heating plants and salvaging parts that may be fit for further service.

"Our mail matter worked so well in developing prospects for business that we tried it to obtain salesmen and found it equally effective. We sent a letter to various high school principals, advising that we had places open for young men to sell heating apparatus as well as gas and electrical appliances for the home. We stressed especially that we might be able to use young men turned down for military service on account of physical defects. We obtained some good results by this direct appeal. Heating dealers might well make note of this point, as a person with flat feet, or hernia, bad eyes, or even heart murmur may still make a good salesman although not acceptable for the army."

Mr. Wehby reports that heating plant installations made by the concern, whether in new or old houses, usually run from $300 to $500. More often than not a stoker is included with the furnace.

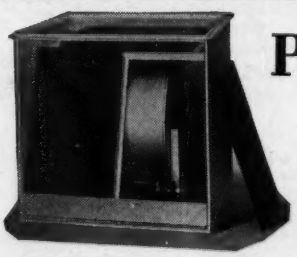
Many jobs are sold on FHA terms with the purchaser being given 18 months to pay. But a surprising number of owners pay cash, Mr. Wehby added.

As merchandise became scarce a number of heating dealers let their showrooms become depleted, but not Wehby, as he figures bare walls make a bad impression. He still has a good display on hand, although some of the merchandise, like stokers cannot be sold except under strict regulation.

LOCKFORMER
WISHES YOU
A VERY
MERRY CHRISTMAS
THE LOCKFORMER COMPANY
4617 ARTHINGTON STREET CHICAGO, ILLINOIS

CHICAGO STEEL BRAKE

BEST BY FORTY-TWO YEARS TEST
DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD. CHICAGO 36



Prompt Delivery
on
FURNACE BLOWERS

- Maintain your volume of work by installing furnace blowers, during winter months.
- Packaged Units . . . Silent—Powerful—Dependable. Standard or celotex insulated units. Complete line of multivane blowers, from 6" to 16" wheels.

GRAND RAPIDS DIE & TOOL CO.
Div. of Expert Die & Stamping Co.
329 Scribner Ave. Grand Rapids 4, Mich.

N.W.A.H. & A.C. Ass'n History (Chapter 9)

(*Continued from page* 58)

Both of those bodies are regulatory. They have to do with trade practice; they establish a code of ethics. Now, as I understand it, it is the intention of the government to incorporate these institutes because there is no better way for the government to find the class of information it will need to carry this new bill into successful effect. In other words, these instruments are all ready."

President McGrath announced that he did not want to go into more detail at this time. As the year progressed, the Association took the necessary steps to fit the industry into the new program.

Under the National Recovery Act the Association was called to work in an entirely new field, for under this act the first move of government authorities was to call upon the trade associations of the country to represent and organize their respective products. While the "Institutes," formed to represent the different products of the furnace industry, functioned separately, the general office of the Association was the clearing house for many of their activities, with the managing director of the Association acting temporarily as secretary for each institute.

The codes required under the act were written and rewritten many times and only those who participated as members of one of the code committees can appreciate the tremendous amount of work and responsibility that rested upon each member.

The negotiations with the representatives of the

General Controls K-20 Series Valves have a wide range of applications where single needle port sizes provide sufficient flow capacity. Extremely practical and simple in design. Body of high-grade brass. All internal parts are bronze or stainless steel. K-20 Valves are two-wire, current failure, no hum, packless construction. Available for any voltage either A.C. or D.C. Write for catalog.

Wartime Manufacturers of Electro-Magnetic and Temperature Controls for Aircraft • Peacetime Producers of Automatic Pressure, Temperature, and Flow Controls

GENERAL CONTROLS
801 ALLEN AVENUE • GLENDALE 1, CALIFORNIA
Branches: Boston • New York • Philadelphia • Cleveland • Detroit
Chicago • Dallas • Denver • San Francisco

● "No Priorities Required" — is the news now on E-Z-ON DAMPER REGULATORS, released from priorities by WPB amendment to Limitation Order L-79.

● Important time and labor-savers in providing smooth-operating, rattle-free Damper installations, E-Z-ONS in the Standard or "Snap-Tite" types are available in stock in any quantity you need.

● USE E-Z-ONS — to your profit. Your jobber stocks and recommends them!

M. A. GERETT CORPORATION
724 WEST WINNEBAGO STREET - MILWAUKEE 5, WISCONSIN

Janette
Blower Wheels

Janette wheels embody a patented design, which enables them to stand exceptionally hard service. For over 18 years, these wheels have given reliable service to manufacturers, whose names are the "WHO'S WHO" of the stoker, oil burner, ventilating, generator, supercharger and air cooled gasoline engine industries.

Janette wheels are rugged, quiet in operation and deliver their maximum volumes of air with a minimum of air noise and power consumption.

You too, would be pleased with their performance.

Janette Manufacturing Company
556-558 W. Monroe St. Chicago, Ill.

RUGGED CONSTRUCTION
SIMPLE OPERATION

MASTER
HEAT REGULATOR

TYPE A-23 Positive snap action—operates quietly, surely and safely.

WHITE MFG. CO.
2368 University Ave., St. Paul, Minn.

GRAVITY and
Air-Conditioning
Registers

Furnace Pipe and Fittings
of all kinds

★

UNITED STATES REGISTER CO.
BATTLE CREEK, MICHIGAN
MINNEAPOLIS • KANSAS CITY • ALBANY

WISS "METAL MASTER"
Compound Action
AVIATION
SNIPS

Used extensively by leading aviation and metal working industries, and in U. S. Government Plants throughout the country.

- Cuts circles, squares and irregular patterns on Stainless, Dural, and Monel Metals with ease.
- All Parts interchangeable.
- M1 for cutting left—M2 for cutting right.

WISS BULLDOG AND STANDARD PATTERN SNIPS are used in Shipyards, on Government construction projects, and on maintenance work wherever sheet metal is required.

Send for literature of complete line
J. WISS & SONS CO.
ESTABLISHED 1848 NEWARK, N. J.

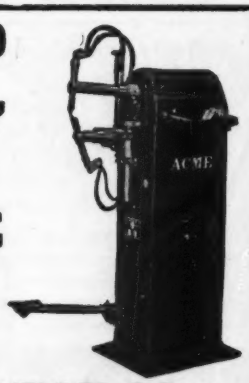
SPOT WELD
WITH AN
ACME "Hot Spot"
WELDER

Proven utility for over 26 years in thousands of sheet metal fabricating plants.

Write for Literature and Prices.

Complete Range of Sizes

Lifetime Guarantee!



ACME ELECTRIC WELDER CO.
2618B Fruitland Road Los Angeles, Calif.

government relative to the necessary codes and with the representatives of labor were a serious matter, for the various code committees were, in effect, bargaining on a collective basis for the industry it represented and the terms and conditions written into such codes were to become the law which would be enforced by the government and carried heavy penalties for violation.

The first code from the furnace industry to reach President Roosevelt was that of the warm air furnace manufacturers.

The chairman of the Code Committee of the Warm Air Furnace Manufacturing Industry was W. L. McGrath, and associated with him as members of that committee were C. Ackerson, F. G. Sedgwick, Harold P. Mueller, Dana Norris, H. T. Richardson, C. A. Olsen and F. E. Mehrings. The managing director of the National Warm Air Heating and Air Conditioning Association acted as secretary of the committee.

When the code was finally submitted to the N. R. A. authorities in Washington it was necessary for the committee to show that they were representatives of the industry. The Association helped materially to that end because with its large membership it had long been recognized as representative of the industry and the committee were members of the Association.

Not a single complaint was filed against the warm air furnace code at the public hearing of the same by any member of the industry.

The industry was also assured by Beverly S. King, assistant deputy administrator of the National Recovery Administration, that there was no thought on the part of the government to run business but that as industry must be self-governing and self-disciplining, a Code Authority would be created in connection with each code, that there would be a representative of the National Recovery Administration on each Code Authority but without a vote. In other words, this representative would simply be there in an advisory capacity.

The register manufacturers, not having any "Institute," organized one and drafted a code which was approved. The blower and fan manufacturers and the furnace pipe and fittings manufacturers also drafted codes, the latter being a particularly difficult one to formulate.

The industry worked conscientiously under N. R. A. and considerable constructive progress was made in the prevention of chiseling, the elimination of abuses and the preservation of at least the slender margin of profit with which the industry had for years seemed satisfied.

The National Recovery Act was a real aid in placing different customers in their proper purchasing classification. For instance, actual jobbers were classified as jobbers and actual retailers as retailers. It was also an assistance in following a rule that all purchasers in a particular class receive the same prices and concessions, the only difference in price being justified by an allowance for some actual saving in cost, which could be proved, such as in the cost of delivery or expense of sale.

The industry, like other industries, had hardly gotten its affairs into running order under N. R. A. when in June, 1935, the United States Supreme Court declared the National Recovery Act unconstitutional and N. R. A., with its insignia, the Blue Eagle, faded out of the picture and was no more.

In spite of the collapse of this government plan to assist business, some of the good rules provided by the codes have been preserved.

SEASON'S GREETINGS

We desire to express our hearty appreciation for your patronage during the past year and trust that we may be favored with your business throughout the coming year . . . and with a renewed confidence wish you a Merry Christmas and a Victorious New Year.

PEERLESS FOUNDRY CO., 1855 Ludlow Avenue Indianapolis, Ind.

Pioneers in War Air Heating Equipment for Over a Third of a Century.

REMEMBER — TO BUY GENUINE REPAIR PARTS for ROUND OAK — Furnaces Stoves and Ranges

ROUND OAK COMPANY

Dowagiac Michigan

SAL-MO ASBESTOS PRODUCTS

QUALITY Asbestos Products for all types of insulation: Papers, Millboards, Pipe Joint Tape, Pipe Coverings for all kinds of steam, hot and cold water lines, Asbestos Cements, Asbestos Ductboard.

SAL-MO SUPPLY DUCT

The popular non-metallic material for constructing Supply and Return Ducts for Warm Air Heating and Air Conditioning Systems.

SALL MOUNTAIN COMPANY

176 W. ADAMS STREET DEPT. K CHICAGO, ILL.

- SKILSAWS
- DRILLS
- BELT SANDERS
- DISC SANDERS
- BENCH GRINDERS
- PORTABLE GRINDERS
- HAND GRINDERS

SKILSAW PORTABLE ELECTRIC **TOOLS**

★ MAKE AMERICA'S HANDS MORE PRODUCTIVE ★

SKILSAW, INC.
5029 Elston Ave., Chicago

REPAIR PARTS

for any and all makes of

STOVES—FURNACES—BOILERS

Also MODERNAIRE FURNACES

Fittings, Registers, Supplies

DES MOINES STOVE REPAIR CO.

Sam C. Green
Fred R. Green

DES MOINES, IOWA
Since 1869

REPAIRS FOR ANY FURNACE BOILER OR STOVE

REPAIR PARTS FOR ANY FURNACES-BOILERS OR STOVES

Complete Line of Sundries and Supplies

FOR QUICK SHIPMENT

OMAHA STOVE REPAIR WORKS

1206-8 DOUGLAS ST., OMAHA 2, NEB.

SINCE 1882

"Designed and Built by the Pioneer"

Sturtevant MILL EXHAUSTER

LARGE, STREAMLINED INLET MEANS MINIMUM LOSSES DUE TO ENTRANCE FRICTION OR EDDIES

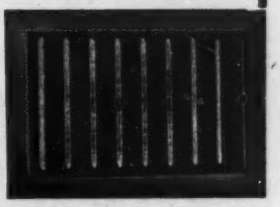
FOR HIGH EFFICIENCY LOW POWER COSTS

B. F. STURTEVANT COMPANY
Hyde Park Boston, Mass.

"NON-METALLIC" REGISTERS

FOR DEFENSE PROJECTS

Approved by Government Authorities for air-conditioning installations in Hospitals, Industrial Plants, Fortifications, etc., under Army, Navy or Maritime rulings. Field-tested STANDFORATED Register and Grille designs of durable, tempered Masonite are fabricated in standard sizes or to your specifications. Write for complete information.



DESIGN NM-SLD—"Non-Metallic" Sliding Damper Foundation Vent.

STANDFORATED

FOR PRODUCTION SPEED-UP—
Specify Precision Processed STANDFORATED Perforations. Industrial Screens, Filters, Guards, etc., made to specifications for vital industries. Handy catalog sent on request.

STANDARD STAMPING & PERFORATING CO.

3137 W. 49th PLACE CHICAGO, ILLINOIS

DASCO
Forged
HAND TOOLS

Chisels, punches, drills, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.

DAMASCUS STEEL PRODUCTS CORP., ROCKFORD, ILL.

REMEMBER THE NAME
COLE
HOT BLAST
FOR A COMPLETE LINE OF
GAS AND OIL-FIRED
FLOOR FURNACES

While we're in war work now, our FLOOR FURNACES may be available sooner than you expect.

Write for details and literature to

COLE HOT BLAST MANUFACTURING CO.
3108 W. 51st St., Chicago 32, Ill.

CHENEY METAL
The Modern
SHEET METAL

- SUPERIOR TO GALVANIZED IRON
- WEATHER PROOF
- FIRE RETARDANT
- MOISTURE PROOF
- FORMS EASILY WITH REGULAR SHOP TOOLS

CHENEY METAL PRODUCTS CO. TRENTON, N.J.

WRITE FOR DESCRIPTIVE FOLDER AND THE NAME OF YOUR NEAREST DISTRIBUTOR

Bremil
Two Sizes
PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to ¼" steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.
Special blades may be obtained for shearing stainless steel

BREMIL MFG. CO., ERIE, PA.

Neubecker—
A. C. Fitting Pattern

(*Continued from page* 44)

plan will be shown. Set off this distance *3-5* in plan on the line drawn from *3°* on the lower miter line in the true lengths measuring from the line *e-f* as shown from *5* to *3*. From *3* draw a line to *5*, the intersection obtained by the line drawn from *5°* on the upper miter line in the true elevation with the line *e-f* at *5*. *3-5* then shows the true length of the dotted line *3-5* in plan. Note that the solid and dotted true lengths are in separate groups which correspond to similar numbers shown in plan and true elevation. By using the dividers the various numbered heights and projections can be verified.

The pattern for the transition piece can now be developed. As the seam line is desired on the corner *1-8* in plan, take the distance of *1-8* in the true lengths of solid lines and place it as shown by *1-8* in the transition pattern. Now with $1^{\times}$-$2^{\times}$ in the 20-inch duct pattern as radius and *1* in the transition pattern as center, describe a short arc near *2* which intersect by an arc struck from *8* as center with the distance *8-2* in the dotted true lengths as radius. Now with $8^{\times}$-$7^{\times}$ in the 16-inch duct pattern as radius and *8* in the transition pattern as center draw a short arc near *7* and intersect it by an arc struck from *2* as a center with *2-7* in the solid true lengths as a radius.

Proceed in this manner using alternately first the proper numbered division along the *miter cut* of the 20-inch duct pattern, then the proper numbered true length of dotted line; the proper numbered divisions along the *miter cut* of the 16-inch duct pattern, then the proper numbered true length of solid line, until the line *8-1* to the right of the transition patterns is obtained which is equal to *8-1* on the opposite side. Connect all these intersections by lines, then will *1-8-8-1* be the net pattern for the tapering transition with unequal taper on all four sides, connecting to a 16 x 16-inch collar at the top and to a 20 x 20-inch collar at the bottom.

Note that the pattern shapes have been laid out so that the collars are separate from the center transition. If it is desired to have the pattern for the collar sides join to the pattern for the transition sides, with full side pattern from top to bottom, to be double seamed or "Pittsburgh" locked, this can be done as follows:

As an example, assume that the side *3-4-5-6* in plan is to have the collars added. Take a reproduction of $3\text{-}3^{\times}\text{-}4^{\times}\text{-}4$ in the 20-inch duct pattern and add it to the transition pattern on the line *3-4*, being careful that the line $3^{\times}$-$4^{\times}$ of the duct pattern comes directly over the line *3-4* of the transition pattern as shown by similar numbered dotted addition. In a similar manner take a reproduction of $5^{\times}\text{-}6^{\times}\text{-}6\text{-}5$ in the 16-inch duct pattern and set the line $5^{\times}$-$6^{\times}$ of the duct pattern

Sand-Grind-Brush

with Black & Decker Electric Sanders

7" Special $53

These husky tools drive abrasive discs, wire brushes, grinding wheels and other attachments . . . make quick work of removing paint and rust, smoothing welds and casting ridges, and many other metalworking jobs. Powerful Universal motors. See your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 782 Pennsylvania Ave., Towson-4, Maryland.

Black & Decker

Portable Electric **TOOLS**

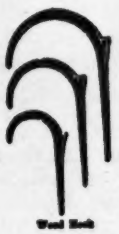
DRILLS, HOLE SAWS, DRILL STANDS, LECTRO-SHEARS, BENCH GRINDERS, SANDERS, PORTABLE GRINDERS

RYERSON CERTIFIED STEELS

10 STRATEGICALLY - LOCATED PLANTS

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

BB HOOKS AND HANGERS



THRU LEADING JOBBERS EVERYWHERE

BERGER BROTHERS CO.

Main Office & Factory

228-237 Arch St., Philadelphia, Pa.

ALLEN

. . . Has The RIGHT SODERING FLUX For Every Sheet-Metal Job!

Let Us Help You With Your Problems

L. B. ALLEN CO., Inc.

6702 Bryn Mawr Ave., Chicago, 31, Ill.

Std. Arr. No. 1 for Belt Drive

New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street Milwaukee, Wis.

For Balanced Atmosphere

THERMO-DRIP HEAT-CONTROLLED HUMIDIFIERS

AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

BARBER Gas Pressure REGULATORS

Sizes ¼" up

Certified by A. G. A. Testing Laboratory

Write for Prices

THE BARBER GAS BURNER CO.

3704 Superior Ave., Cleveland, O.

Repair Parts FOR ALL HEATING UNITS

BRAUER REPAIR PARTS STOVE FURNACE BOILER OIL STOVE RANGE

A. G. BRAUER SUPPLY CO.

Distributors of All Heating and Air Conditioning Equipment

2100 Washington Ave. St. Louis, Mo.

DASCO
Forged
HAND TOOLS

Chisels, punches, drills, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.

DAMASCUS STEEL PRODUCTS CORP., ROCKFORD, ILL.

REMEMBER THE NAME
COLE HOT BLAST
FOR A COMPLETE LINE OF
GAS AND OIL-FIRED
FLOOR FURNACES

While we're in war work now, our FLOOR FURNACES may be available sooner than you expect.

Write for details and literature to

COLE HOT BLAST MANUFACTURING CO.
3108 W. 51st St., Chicago 32, Ill.

CHENEY METAL
The Modern SHEET METAL

- SUPERIOR TO GALVANIZED IRON
- WEATHER PROOF
- FIRE RETARDANT
- MOISTURE PROOF
- FORMS EASILY WITH REGULAR SHOP TOOLS

CHENEY METAL PRODUCTS CO. TRENTON, N.J.

WRITE FOR DESCRIPTIVE FOLDER AND THE NAME OF YOUR NEAREST DISTRIBUTOR

Bremil

PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to ¼" steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.
Special blades may be obtained for shearing stainless steel

BREMIL MFG. CO., ERIE, PA.

Neubecker—
A. C. Fitting Pattern

(*Continued from page* 44)

plan will be shown. Set off this distance *3-5* in plan on the line drawn from *3°* on the lower miter line in the true lengths measuring from the line *e-f* as shown from *5* to *3*. From *3* draw a line to *5*, the intersection obtained by the line drawn from *5°* on the upper miter line in the true elevation with the line *e-f* at *5*. *3-5* then shows the true length of the dotted line *3-5* in plan. Note that the solid and dotted true lengths are in separate groups which correspond to similar numbers shown in plan and true elevation. By using the dividers the various numbered heights and projections can be verified.

The pattern for the transition piece can now be developed. As the seam line is desired on the corner *1-8* in plan, take the distance of *1-8* in the true lengths of solid lines and place it as shown by *1-8* in the transition pattern. Now with $1^{\times}$-$2^{\times}$ in the 20-inch duct pattern as radius and *1* in the transition pattern as center, describe a short arc near *2* which intersect by an arc struck from *8* as center with the distance *8-2* in the dotted true lengths as radius. Now with $8^{\times}$-$7^{\times}$ in the 16-inch duct pattern as radius and *8* in the transition pattern as center draw a short arc near *7* and intersect it by an arc struck from *2* as a center with *2-7* in the solid true lengths as a radius.

Proceed in this manner using alternately first the proper numbered division along the *miter cut* of the 20-inch duct pattern, then the proper numbered true length of dotted line; the proper numbered divisions along the *miter cut* of the 16-inch duct pattern, then the proper numbered true length of solid line, until the line *8-1* to the right of the transition patterns is obtained which is equal to *8-1* on the opposite side. Connect all these intersections by lines, then will *1-8-8-1* be the net pattern for the tapering transition with unequal taper on all four sides, connecting to a 16 x 16-inch collar at the top and to a 20 x 20-inch collar at the bottom.

Note that the pattern shapes have been laid out so that the collars are separate from the center transition. If it is desired to have the pattern for the collar sides join to the pattern for the transition sides, with full side pattern from top to bottom, to be double seamed or "Pittsburgh" locked, this can be done as follows:

As an example, assume that the side *3-4-5-6* in plan is to have the collars added. Take a reproduction of 3-$3^{\times}$-$4^{\times}$-4 in the 20-inch duct pattern and add it to the transition pattern on the line *3-4*, being careful that the line $3^{\times}$-$4^{\times}$ of the duct pattern comes directly over the line *3-4* of the transition pattern as shown by similar numbered dotted addition. In a similar manner take a reproduction of $5^{\times}$-$6^{\times}$-6-5 in the 16-inch duct pattern and set the line $5^{\times}$-$6^{\times}$ of the duct pattern

Sand-Grind-Brush

with Black & Decker Electric Sanders

7" Special $53

These husky tools drive abrasive discs, wire brushes, grinding wheels and other attachments . . . make quick work of removing paint and rust, smoothing welds and casting ridges, and many other metalworking jobs. Powerful Universal motors. See your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 782 Pennsylvania Ave., Towson-4, Maryland.

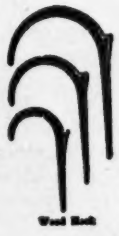
Black & Decker

Portable Electric TOOLS

DRILLS, HOLE SAWS, DRILL STANDS, LECTRO-SHEARS, BENCH GRINDERS, SANDERS, PORTABLE GRINDERS

BB

HOOKS AND HANGERS

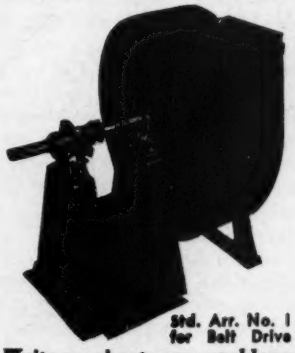


THRU LEADING JOBBERS EVERYWHERE

BERGER BROTHERS CO.

Main Office & Factory

229-237 Arch St. Philadelphia, Pa.



Std. Arr. No. 1 for Belt Drive

New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

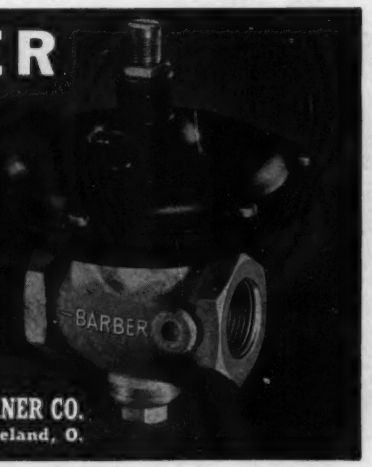
Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY

1817 South 66th Street Milwaukee, Wis.

BARBER

Gas Pressure REGULATORS



Sizes ¼ up

Certified by A. G. A. Testing Laboratory

Write for Prices

THE BARBER GAS BURNER CO.

3704 Superior Ave., Cleveland, O.

RYERSON CERTIFIED STEELS

10 STRATEGICALLY - LOCATED PLANTS

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

ALLEN

. . . Has The RIGHT

SODERING FLUX

For Every Sheet-Metal Job!

Let Us Help You With Your Problems

L. B. ALLEN CO., Inc.

6702 Bryn Mawr Ave., Chicago, 31, Ill.

For Balanced Atmosphere

THERMO-DRIP HEAT-CONTROLLED HUMIDIFIERS

AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa

Repair Parts FOR ALL HEATING UNITS

BRAUER REPAIR PARTS — STOVE, FURNACE, BOILER — OIL STOVE, RANGE

A. G. BRAUER SUPPLY CO.

Distributors of All Heating and Air Conditioning Equipment

2100 Washington Ave. St. Louis, Mo.

ECON-O-COL
the "Stronghearted"
STOKER
ECON-O-COL Automatic COAL BURNER
ECON-O-COL STOKER DIVISION
COTTA TRANSMISSION CORP.
ROCKFORD ILLINOIS

Leader
KOOLSTACK FURNACES
FOR STOKERS
OIL or HANDFIRED
50,000 to 200,000 BTU's
Patented Damper Uses All the Heat in the Added Heating Surface
THAT IS SOMETHING TO SELL
LEADER IRON WORKS, Inc.
Decatur Illinois

REPLACE FURNACES ONLY WHEN NECESSARY
REPAIR IF AT ALL POSSIBLE
USE GENUINE
NiAGARA
MONARCH • PEERLESS
FURNACE REPAIR PARTS
THE FOREST CITY FOUNDRIES CO.
2500 WEST 27th ST., CLEVELAND 13, OHIO

GILCO
Automatic
FURNACES and WATER HEATERS
J. L. GILLEN CO.
DOWAGIAC • • MICH.

☆ WAR TIME

Rich Electric & Engineering Co., Prospect St., Elyria, Ohio, formerly Uni-Therm Products Co., has moved into a new building and is operating entirely on government work, making aircraft parts and munitions parts. The equipment now is all engine lathes, milling machines, Brown & Sharp automatic screw machines, shapers and general machine shop equipment.

This is a father and son organizatsn.—H. W. Rich.

Anchor Post Fence Company, Eastern Avenue and Kane St., Baltimore 24, Maryland, is manufacturing heaters for bombers and other aircraft, also various ship's fittings as well as ammunition trays, bomb fins and other articles used in warfare.

Lt. Commander Heggie has been replaced as factory manager by John S. Case. Those in service are

Lt. Commander **V. W. Heggie**, USNR, Vice-President in charge of manufacturing, now stationed at Howard Aircraft Corporation, St. Charles, Illinois.

Lt. **James B. Munson**, USMC, former salesman. Presumed to be stationed somewhere in the Pacific.

Lt. **James Stoll**, CWF, former salesman now in Chemical Warfare Service, stationed in Alabama.

Donald G. Day, former salesman, now with War Production Board.

Ernest Kluegel & Co., 187 West Kellogg Blvd., St. Paul, Minnesota, reports **Lt. Ernest Kluegel, Jr.**,—a member of the firm—is now a lieutenant in Anti-Aircraft at Camp Edwards, Mass. He has been in the service a year.

The company has installed two cooling unit jobs at American Hoist & Derrick and one cooling unit job at National Bearing Company—both in St. Paul, Minnesota.

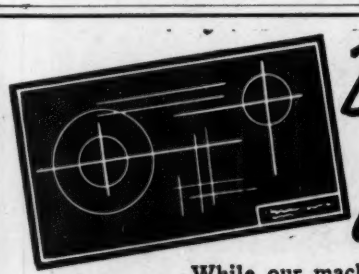
Capt. Joseph E. Kluegel, son of **Ernest Kluegel, Sr.**, commanded a Signal Corps Company which took part in the invasion of Africa and Sicily.

Inland Steel Company, 38 S. Dearborn St., Chicago 3, publishes "Inland News" in the interest of employees and devotes a page or more each issue to the honor roll. The September, 1943, issue showed a total of 3,589 in service, and letters and photographs of the servicemen and women. Those in service receive the "News" and are invited to send news items, pictures and to keep the company advised of their latest address. The company flies the Army-Navy "E" and Minuteman flags.

E. L. Payne, vice-president and general manager, **Payne Furnace & Supply Co., Inc.**, Beverly Hills, California, accepted the Army-Navy "E" award recently presented to "the men and women" of the Company for "outstanding performance in producing materials of war."

In peacetime, one of America's leading furnace manufacturers, "Payneheat" has been converted to war production for about two years.

Mr. Payne recently was elected president of the Pacific Coast Gas Association.


Blueprint for Peace
While our machinery spins to turn out the go of war, our drafting rooms and experimen laboratories hum with activity on post-war heati and air-conditioning products. We'll be ready the post-war period; you can depend on this.
CONCO Automatic PACKAGED HEAT
CONCO CORPORATIO
Division of H. D. Conkey & Mendota, Ill.

TRADE NEWS ☆

Tuttle & Bailey, Inc., New Britain, Conn., is located in an area where shortage of labor is critical and for that reason is not permitted to use their manpower for the manufacturing of registers and grilles for purely heating installations where their engineering "know-how" is not so urgently needed. They can, however, ship items in stock.

Meanwhile they are building bomb cluster adapters, radar equipment, air ports (port holes and covers), inclined shipboard ladders, de-icing systems for planes, shell discs for heavy artillery, field telephone assemblies, sound boxes for auxiliary power in PT boats and bombers, fire fighting equipment for ships, electrical equipment for ships and planes.

Lt. Robert A. Gulick, son of **R. A. Gulick**, president of **The May-Fiebeger Co.**, Newark, Ohio, is a Naval hero.

"From some undisclosed part of the South Pacific battle theatre, Lt. Gulick flew from an unnamed but large aircraft carrier. Not so many morns ago, Lt. Gulick participated in a naval attack on Rabaul Harbor. Lt. Gulick was flight leader executive officer of a squadron that set out to accomplish a mission. He led his fliers between two volcano mountains, below crest of the volcano, into sight of the harbor and promptly sank one heavy cruiser. Three planes of the flight coming in from the landside between the mother and sister volcanos, caught their prey with three directly launched torpedoes."—WJW Tuesday, Nov. 16.

Hart & Cooley Manufacturing Co., Holland, Michigan, is proud of the 56 employees now in the Armed Forces. Of these, 21 are known to be on active duty overseas, some have been wounded and returned to the states. The H&C boys are serving in all branches of the service—Army, Navy, Air Forces, Marines, Navy and Seabees. Four Hart & Cooley men are known to have sacrificed their lives in the past year.

The Hart & Cooley plant at Fort Erie North, Ontario, Canada, has 12 men in the service, two of whom are with the American Forces. One has also lost his life.

Lt. Jerold H. Van Alsburg, H&C salesman and heating and ventilating engineer, was given a leave of absence from the Company to serve with the U. S. Navy for the duration of the war. He took over his duties with the Navy on February 14, 1942. He was serving with the Bureau of Ships in Washington, D. C., as officer in charge of Air Conditioning Equipment until September, 1943, when he was transferred to a Navy Yard for training in ship repair. He has completed this training and has been assigned a full crew of men and equipment and is now en route overseas.

The company is constantly increasing production of their standard register products, but production is limited somewhat by inability to secure necessary materials. The trade has been very co-operative in accepting substitute goods.—**R. W. Blanchard, President.**

We have been told by people who know that

GRAVITY *Syncromatic* FORCED AIR

WARM AIR FURNACES

are the finest!

Jobbers—Dealers—Write for information

Syncromatic Corporation

3373 N. HOLTON STREET MILWAUKEE 12, WIS.

ROCK ISLAND REGISTERS and INTAKES

Two trade marks to remember when you want the height of efficiency, beauty and low cost combined in registers and intakes.

AIR-VANE NO STREAK

Dealers Net Estimating book, a time and money saver, sent free upon request.

★ **ROCK ISLAND REGISTER CO.** ROCK ISLAND ILLINOIS ★

V THE BIG JOB

Mercoid Controls are still being built and sold, though the volume is almost entirely on industrial types. These carry the highest war priority and find their way into war plants everywhere throughout the country, where they are doing their important part in the big job of essential production.

☆ ☆ ☆

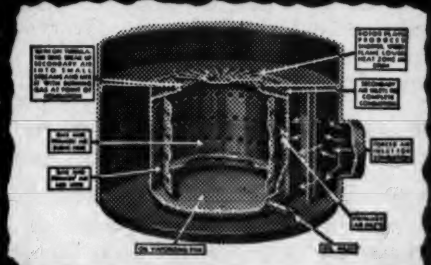
AUTOMATIC CONTROLS
FOR HEATING, AIR CONDITIONING, REFRIGERATION AND NUMEROUS INDUSTRIAL APPLICATIONS

THE MERCOID CORPORATION, 4209 BELMONT AVE., CHICAGO 41, ILL.

...mous Patented *Monogram* Vaporizing Burner
Provides Highest Known Operating Efficiency with Oil

Full Forced Winter Air Conditioners

Booster Gravity Units



Utility Room Units

Automatic Water Heaters

The QUINCY STOVE MFG. COMPANY, Quincy, Illinois

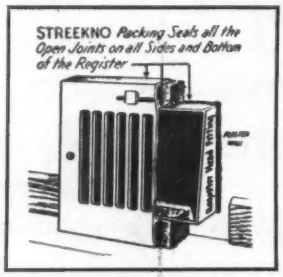
Write for Catalog and Prices

SPEED UP ORDERS with a BEVERLY SHEAR

Throatless shears that cut any shape . . . straight, circular or irregular. FASTER — Precision — accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

BEVERLY SHEARS CO.
3000 W. 110th Pl., Dept. 1
CHICAGO, ILL.

KEEP A FULL FORCE WORKING!



Keep all your men on full time working schedules by having them install Streekno in all your warm air heating jobs. Streekno saves hundreds of dollars in decorating, eliminates dirt streaks above and around registers.

Millions of home owners want it. It sells for only $2.00 and you make a big profit. Don't lose men in the slack season.

Write today for complete details about merchandising help and a STREEKNOTIZING campaign of your own.

EXCEL HEATING & AIR CONDITIONING CO.
3715-19 Belmont Ave., Chicago 18, Ill.

IN 194- ?

When the strife is ended and you dealers can again present to prospective buyers a line of furnaces that will deliver any desired heat most efficiently and economically, and last indefinitely . . . Remember the Vernois line—of "Hell on Earth" tested furnaces . . . they have proved their ability as reliable warm air heating plants for the past 22 years . . . and will do so again in 194-?

Vernois

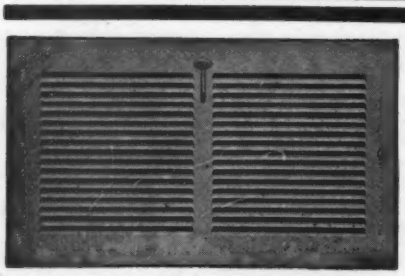
MT. VERNON FURNACE & MFG. CO.

● MT. VERNON
● ILLINOIS

"ALNOR" VELOMETER
DIRECT READING AIR VELOCITY METER

"Alnor" Velometer fills the need for a simple, accurate means of determining air velocity in air conditioning, forced air exhaust ducts, etc. Peak efficiency operation is now more important than ever before . . . and Velometer with its many simple attachments assures correct readings, under the most adverse conditions, in feet per minute, right on the scale! These readings enable you to gauge the systems efficiency and MAKE NECESSARY ADJUSTMENTS to assure greatest efficiency. Write for new catalog now!

Illinois Testing Laboratories, Inc.
412 N. La Salle St., Chicago, Ill.



Aire-Flex 7032 Single Louvre Adjustable Register

● Auer is now engaged principally on vital aircraft parts and other wartime products. We are still able to furnish most styles of registers from inventory stocks, for all purposes permitted by Federal regulations.

Auer Register Book sent on request.

THE AUER REGISTER COMPANY, Cleveland, O.

AUER REGISTERS
& GRILLES · For Air Conditioning and Gravity

directly over the line *5-6* in the transition pattern as shown in an upside down dotted position. When this has been done, then will 3^V-4^V-6^V-5^V in the transition pattern be the full net pattern for the side *3-4-5-6* in plan. In this manner the other three full side patterns can be laid out. Allow edge for seaming or Pittsburgh or hammered lock.

◆

Heating Complaints Handled by Telephone

(*Continued from page* 39)

need more heat, and you could get the impression that you burned too much because it was used quickly. A sudden cold snap would make a big hole in the coal pile, but it does not necessarily mean you burned too much or that the season's requirement will be higher than normal.

Odor of Coal Gas

1. ***Is the check draft damper in the smoke pipe located between the turn damper and the chimney? (Fig. 3)***

(If the answer is *"YES"*)
We will look elsewhere for the trouble.
(If the answer is *"NO"*—the check damper is nearer the boiler or furnace than the hand damper)
You should have the check damper moved at once to a position nearer the chimney than the hand turn damper. The present installation is unsafe because gas can be forced out through the check damper to the cellar any time the hand damper is closed.

2. ***Is the odor of gas most noticeable just after the fire is banked?***

(If the answer is *"YES"*)
The check damper could be properly located in the smoke pipe and gas would still back into the cellar through any leaks around the flue cleanout doors or the firing door if the hand damper was closed too tight, when banking the fire.
It is considered good practice to keep the hand damper turned part way across the smoke pipe but you will have to determine just how far to close the one on your heater and still keep the gases moving toward the chimney.
Another method is to leave the slide or wheel in the firing door open long enough for gas to ignite before the fire is banked. This will prevent back-fires that blow the doors open.
It is advisable to leave a bright spot in the front when adding coal. (Fig. 3)

3. ***Is the top of the chimney lower than surrounding buildings or trees? (Fig. 3)***

(If the answer is *"YES"* or *"I DON'T KNOW"*)
This condition could be the cause for the odor of gas because obstructions higher than the chimney create down-drafts or back-drafts in the chimney.

4. ***Is your home heated by a warm air furnace?***

(If the answer is *"YES"*—ask the next question)

5. ***Was it taken apart and reassembled recently?***

If there are cracks or openings in or around the fire chamber, coal gas can leak into the air circulating chamber of the heater and be carried to the living quarters.

AMERICAN ARTISAN Service Section

FANS
BLOWERS
EXHAUSTERS
"Lungs for Industry"

REBUILT and GUARANTEED
Prompt Shipments From Large Stocks
All Types—All Makes—All Sizes
And We Really Rebuild 'Em

Why Wait Months for New?

GENERAL BLOWER CO.
Phones: MONroe 0244
403 NORTH PEORIA ST.
CHICAGO 22, ILL.

SERVICE SECTION: Rates for display space in the Service Section are $5.00 per inch per insertion. One-inch minimum space accepted.

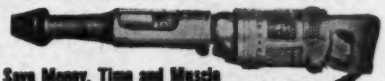
Classified Section: Rates for classified advertising are 5 cents for each word including heading and address. Count seven words for keyed address. Minimum $1.00 for each insertion. Cash must acompany order.

RESULTS

Do you want a salesman or representative . . . a dealer or a jobber? Do you want to buy or sell equipment or supplies? Classified advertisements in these pages bring the right response, bring you results that save time and guesswork.

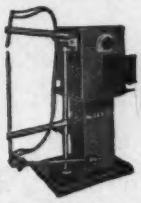
Only 5 cents a word for specialized audience that is interested in your message!

American Artisan
6 N. Michigan Avenue
Chicago 2, Illinois



Save Money, Time and Muscle
Drill Concrete with the "Do-All" Combination Electric Hammer and Drill. Set expansion bolts 10 to 20 times faster than with hand tools. Drills concrete, brick, stone, metal, wood. Easy to maintain. Weighs 15 lbs. Drills to 1⅝" in concrete. 2400 blows per min. Bulletin 400. Phone Austin 9366.
WODACK ELECTRIC TOOL CORPORATION
4044 W. Huron St., Chicago, Ill.

WELDING HEADQUARTERS

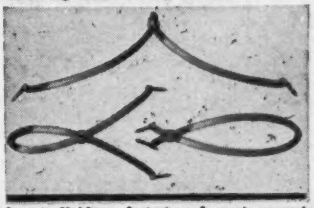


Electric welding equipment of every description to weld from a watch case to a door. Special or standard SPOT WELDERS from ¼ to 500 K.V.A. A.C. Arc Welders from 100 to 400 Amps. We invite contract Spot Welding in large or small quantities.

EISLER ENGINEERING CO.
CHAS. EISLER
781 S. 13th St. (Near Avon Ave.) Newark, N. J.

Will Cut Soldering Costs In Half
No More Changing of Irons

Always the Right Amount of Heat for the lightest as well as the heaviest jobs. Especially adaptable for soldering with Victory Solder.



Quick set dividers—fastest and most accurate on the market—two sizes for circles up to 36" and 48". Guaranteed—Order now.

REINER & CAMPBELL CO., Inc.
667 Norwood Terrace, Elizabeth, N. J.

Trademark
YAGER'S Soldering Salts — Paste
Reg.

Two standard fluxes for all soft soldering. Safe, quick, certain. Buy them at your jobbers or write us if he cannot supply you.

½ lb., 1 lb., 5 lb. cans; 2 oz., 6 oz., 12 oz.

ALEX. R. BENSON CO., INC., HUDSON, N. Y.

Better for Every Spraying Purpose

MARLEY SPRAY NOZZLES

"Tops" for Air Washing, Humidifying, Brine Spray Lofts, etc. Marley nozzles lead all in sales and in profits to you.

*Finer, more uniform spray.
*Effective operation at Low Pressures. *No internal parts to clog or wear.

MARLEY CO., INC. Write for Literature Now! Kansas City, Kansas

NEW *Improved* PENTCO
Compound Action AVIATION — SHEET METAL and ELECTRICIAN SNIPS
QUALITY PRECISION TOOLS

No. 95A Right Aviation
No. 96A Left

Maximum power, minimum effort.

Combination, Right and Left, No. 185-190-195.

Blades made from alloy steel. Hardened and tempered for rough use. Will cut with ease all grades of steel. Side locking feature that will not interfere with cutting blades.

Case hardened bolts.

IMMEDIATE DELIVERY

Write for Circular

PENN TOOL CO.
2415 N. Howard St., Philadelphia, Pa.

QUICK DELIVERY

BRAKES
POER: 10'⅜", 8'14 ga., 6'12 ga.
HAND: 8'18, 6'8, 8'16, 5'20, 4'20 ga.

FOLDERS
36", 30", 20" PEXTO & NIAGARA.
60" NIAGARA POWER PIPE FOLDER.

MILLS
PLAIN: No. 2B K&T DOUBLE OVER-ARM, No. 2 CINCINNATI.
VERTICALS: No. 2½B K&T & No. 2 B&S.
UNIVERSALS: No. 2 B&S; Nos. 1 & 2 CIN., No. 1½ HENDEY NORTON.

PUNCHES
HAND: No. 10 EXCELSIOR, 19" thr.
No. 56 NIAGARA, ⅛"x⅛";
No. 40 WHITNEY, 5/18" thru ⅛".
DEEP THROAT: No. 15 TOLEDO; No. 20 EXCELSIOR, No. 135-A NIA.

PRESS BRAKES
OHL: 10' 14 ga., 5' 14 ga.
CHICAGO STEEL: Nos. 255, 254.

DOUBLE CRANK PRESSES
No. 4-80 W&W, 10" stroke; 4" shaft;
No. 166-C CONSOLIDATED, 4" stroke.
No. 92½-H TOLEDO, 6" str. 5" shaft.

ROLLS
ANGLE: 6"x6"x¾" WICKES.
LEVELLER: 5' NILES.

SHEARS
FOOT: 36" & 30" PEXTO & NIAGARA.
36" NIAGARA with curved blades.
POWER: 10' 16 ga. OHL.
RING & CIRCLE: No. 510 Niagara ⅜" cap., back geared, motor driven; QUICK-WORK, 5/32" shear, ⅛" flang;
ROTARY: 14 ga. QUICKWORK & YODER.

SPOT WELDERS
250 KVA FEDERAL PRESS TYPE.
20 & 30 KVA GIBB PRESS TYPE.
7½ KVA IDEAL; 10 KVA TAYLOR.

MISCELLANEOUS ITEMS
No. 137 PEXTO FOOT NOTCHER.
No. 1 GRAY NIBBLER, ⅛" cap.

SEND FOR CATALOG

INTERSTATE MACHINERY CO., INC. YARDS 5800
1433 W. PERSHING RD., CHICAGO 9, ILL.

Index to ADVERTISERS

Accurate Mfg. Works ..... *
Acme Electric Welder Co. 82
Adams Co., The 73
Aeolus Dickinson ..... *
Aerofin Corp. 18
Air Control Products, Inc. 34
Airtherm Mfg. Co. 72
Allen Co., L. B. 85
Allen Corp. 76
American Air Filter Co., Inc. ..... *
American Blower Corp. ..... *
American Brass Co. 16
American Radiator & Standard Sanitary Corp. 19
American Rolling Mill Co., The ..... *
American Smelting and Refining Co. .. *
Auer Register Co. 88
Automatic Humidifier Co. 85
Automatic Products Co. ..... *

Badger Mfg. and Sales Co. ..... *
Barber Gas Burner Co., The 85
Bayley Blower Co. 85
Benson Co., Inc., Alex R. 89
Berger Bros. Co. 85
Bethlehem Steel Co. 57
Beverly Shear Co. 87
Black & Decker Mfg. Co. 85
Blocksom & Co. ..... *
Brauer Supply Co., A. G. 85
Bremil Mfg. Co. 84
Breuer Electric Mfg. Co. ..... *
Burt Mfg. Co. 74

C.-B. Tool Co. ..... *
Carnegie-Illinois Steel Corp. 46
Central Steel & Wire Co. ..... *
Century Electric Co. ..... *
Cheney Metal Products Co. 84
Cherry Rivet Co. ..... *
Clarage Fan Co. 78
Cole Hot Blast Mfg. Co. 84
Continental Steel Corp. ..... *
Conco Corp. 86
Condensation Engineering Corp. 74
Connor Engineering Corp., W. B. .... *
Cotta Transmission Corp. 86
Crescent Tool Co. 15

Damascus Steel Products Corp. 84
Densewood Corporation ..... *
Des Moines Stove Repair Co. 83
Detroit Lubricator Co. 20
Dreis & Krump Mfg. Co. 80

Eisler Engineering Co. 89
Elgo-Shutter & Mfg. Co. ..... *
Evans Machine Company, L. R. ..... *
Excel Heating & Air Conditioning Co. . 88

Farrelloy Company, Inc. ..... *
Field Control Division 66
Fireline Stove & Furnace Lining Co. .. *
Fitzgibbons Boiler Co., Inc. ..... *
Forest City Foundries Co. 86

Gehl Bros. Mfg. Co. ..... *
General Blower Co. 89
General Controls 81
General Electric Co. ..... *
Gerett Corp., M. A. 81
Gillen Co., J. L. 86
Grand Rapids Die & Tool Co., Div. of Expert Die & Stamping Co. 80
Grant Wilson, Inc. 17
Gray, G. L. ..... *

Harrington & King Perforating Co. 79
Hart & Cooley Mfg. Co. 68
Heil Co. ..... *
Henry Furnace Co., The ..... *
Hotstream Heater Co., The ..... *
Hussey & Co., C. G. 69

Ilg Electric Ventilating Co. ..... *
Illinois Testing Laboratories, Inc. 88
Independent Register Co., The ..... *
Interstate Machinery Co. 89

Jackson & Church Co. ..... *
Janette Mfg. Co. 81
Johnson Co., S. T. ..... *

Kidder Mfg. Co. Inc., J. F. ..... *

Lamneck Products Inc., Inside Front Cover
Leader Iron Works, Inc. 86
Lewis Laboratories, Inc., Paul ..... *
Libert Machine Co. ..... *
Lincoln Electric Co. ..... *
Lockformer Co. 80

Marley Co., The 89
Marshalltown Mfg. Co. ..... *
May-Fiebeger Co. 80
May Oil Burner Co. 79
Mercoid Corp., The 87
Meyer & Bro. Co., F. 79
Meyer Furnace Co. 79
Michigan Tank and Furnace Corp. 78
Minneapolis-Honeywell Regulator Co. *
Morrison Products, Inc. ..... *
Mt. Vernon Furnace & Mfg. Co. 88
Mueller Furnace Co., L. J. ..... *

National Engrg. & Mfg. Co. ..... *
Nelson Corp., Herman, The ..12, 13 and 78
Niagara Machine & Tool Works 73
Northwestern Stove Repair Co. ..... *

Olsen Mfg. Co., C. A. 14
Omaha Stove Repair Works 83
Osborn Co., J. M. & L. A. 11
Owens-Corning Fiberglas Co. 67

Parker-Kalon Corp. 8
Payne Furnace & Supply Co. 71
Peck, Stow & Wilcox Co., The 71
Peerless Foundry Co. 83
Penn Boiler & Burner Mfg. Corp. ..... *
Penn Electric Switch Co. 9
Penn Tool Co. 89
Perfex Corp. ..... 6 and 7

Quincy Stove Mfg. Co. 87

Randall Graphite Products Corp. 77
Register & Grille Mfg. Co. ..... *
Reiner & Campbell Co., Inc. 89
Research Products Corp. ..... Outside Back Cover
Rock Island Register Co. 87
Round Oak Co. 83
Rybolt Heater Co. 5
Ryerson & Son, Inc., Joseph T. 85

Sall Mountain Co. 83
Schwab Furnace Co. ..... *
Schwitzer-Cummins Co. 77
Sheetlock Co. 77
Skilsaw, Inc. 83
Standard Stamping & Perforating Co. .. 83
Stanley Electric Tool Div., The Stanley Works ..... *
Sturtevant Co., B. F. 83
Superior Sheet Steel Co. ..... *
Surface Combustion Corp. ..... *
Swartwout Co. 77
Syncromatic Air Conditioning Corp. .. 87

Unique Manufacturing Co., Inc. ..... *
U. S. Air Conditioning Corp. 3
U. S. Register Co. 82
U. S. Steel Supply Co. 46
U. S. Steel Corp. 46
Universal Power Corp. 76
Utility Fan Corp. ..... *

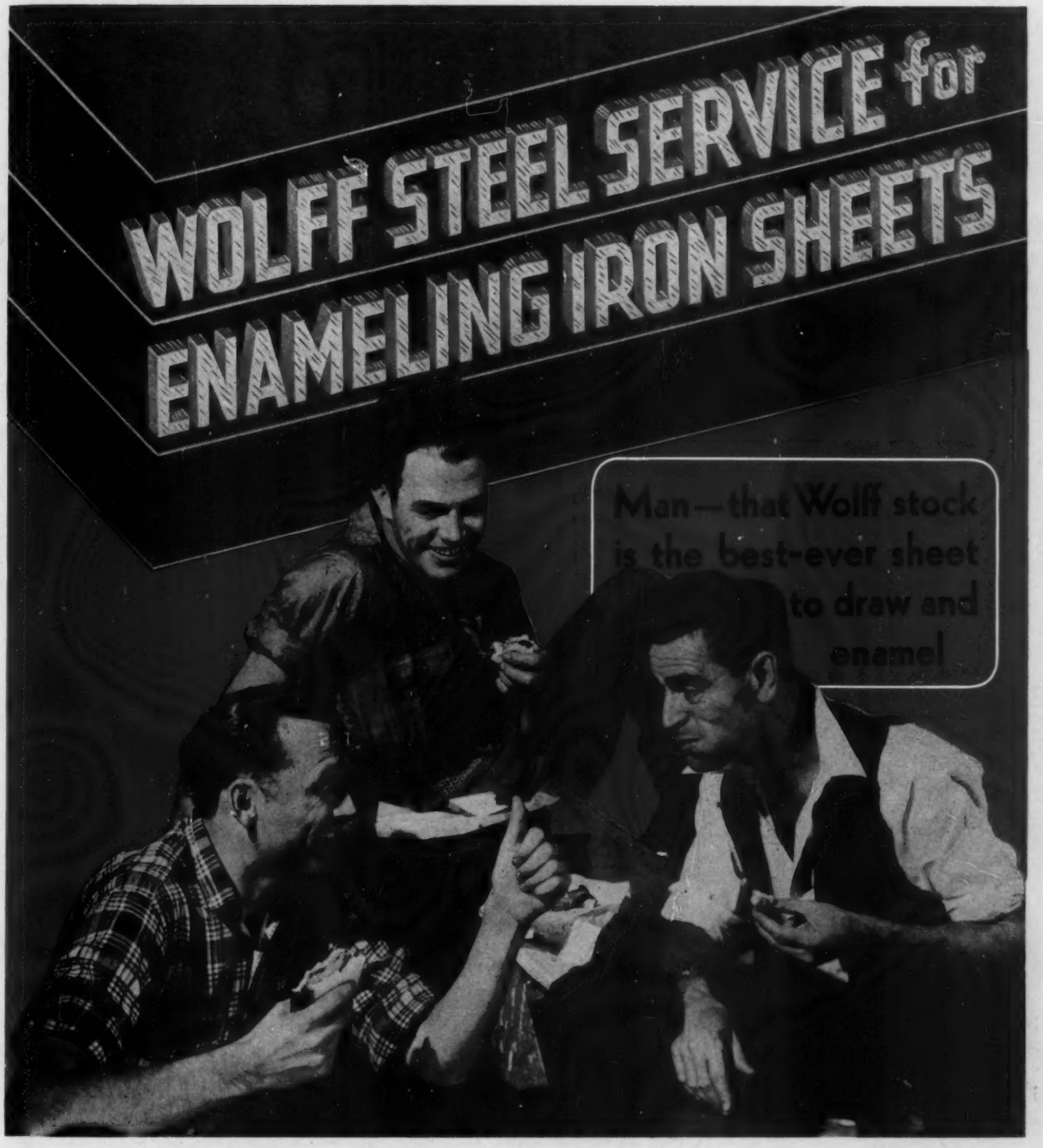
Verson Allsteel Press Co. 70

Wagner Electric Corp. ..... *
Wayne Oil Burner Co. 74
White Mfg. Co. 82
White-Rodgers Electric Co. 75
Whiting Corp. ..... *
Whitney Mfg. Co., W. A. 74
Whitney Metal Tool Co. 76
Wilson, Inc., Grant 17
Wise Furnace Co. ..... *
Wiss & Sons Co., J. 82
Wodack Electric Tool Corp. 89
Wolff and Company, Benjamin ..... Inside Back Cover
Wood Industries, Inc., Gar ..... *
Wysong and Miles Co. ..... *

York Heat Div., York Shipley, Inc. .... *

Zink Co., John ..... *

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in other issues is marked with an asterisk.



Shop men everywhere find solid satisfaction in the porcelain enameling iron you now can buy from Wolff—satisfaction doubly assured by the twin marks of prime, uniform quality found on every sheet. The Armco label linked with the Wolff Red Seal gives you the strongest material guarantee in the entire field of porcelain enameling sheets for smooth-running, trouble-free production. Use these great Wolff-Armco Ingot iron sheets now for the exacting porcelain enameling demands of war . . . plan with them to shape your future products in peace.

ARMCO

BENJAMIN WOLFF & COMPANY SUPER STEEL SERVICE CHICAGO

BENJAMIN WOLFF and COMPANY

58th St. at Seeley Ave. Chicago, Ill.

"You get my furnace to work better!"

It's probably time to change
RESEARCH AIR FILTERS

You're shorthanded . . . replacement parts are slow. So when a customer wants something done "at once", why not suggest the quickest, easiest way to help a poorly operating heating system—CHANGE FURNACE FILTERS! Take out the dirty stuffed-up filters (a few minutes job) and replace with new RESEARCH AIR FILTERS. The heating system will perk up . . . fuel bills will be cut . . . more even heating of rooms will result. **There's no shortage** of RESEARCH AIR FILTERS. Your distributor has them ready for immediate delivery.

FREE! *to Furnace Men*

Send for this free booklet listing sizes of Research Air Filters and number of each required for various makes of forced warm air furnaces and air conditioning units.

CASH IN ON THE "TIME TO CHANGE" CAMPAIGN

The smartest of merchandising helps—folders, mats, display material, everything you need to build sales fast—furnished to you free. Write for them.

RESEARCH PRODUCTS CORPORATION

DEPT. A-12, MADISON 3, WISCONSIN